Healthcare does not lack for information. The 500 petabytes of data available in 2012 will reach 25,000 petabytes by 2020, according to IDC Health Insights. The sector sits on a massive resource that will mushroom at an astonishing rate. We’ll be talking brontobytes soon.

The ONC’s vision calls for an interoperable health IT ecosystem that’s capable of wielding this Big Data to advance medical science, support the triple aim, and save lives.

It will take a while for this national learning ecosystem to become a reality. But providers are using the data at their disposal now to anticipate problems, develop solutions, rein in costs, and enhance care. Adopt an integration-based analytics strategy that mines clinical and business information from internal and external sources, and you can gain the insight you need to make more informed decisions and adapt more nimbly to change.
Here are 6 ways to make smarter decisions using integration-based analytics:

<table>
<thead>
<tr>
<th>Tactic</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start with interoperability. Turn to page 3 to learn more.</td>
<td>Joins data from disparate systems; unifies your intelligence</td>
</tr>
<tr>
<td>Scrub your data. Turn to page 3 to learn more.</td>
<td>Ensures data consistency and quality</td>
</tr>
<tr>
<td>Seek one source of truth. Turn to page 4 to learn more.</td>
<td>Facilitates the delivery of cohesive answers anywhere across the organization</td>
</tr>
<tr>
<td>Choose a vendor that has a large data platform and in-depth knowledge of healthcare. Turn to page 4 to learn more.</td>
<td>Provides an optimal mix of IT expertise and industry-specific experience</td>
</tr>
<tr>
<td>Marry clinical and operational findings to maximize their impact. Turn to page 6 to learn more.</td>
<td>Enables secondary uses of data for many applications</td>
</tr>
<tr>
<td>Base your decisions on real-time information. Turn to page 6 to learn more.</td>
<td>Supports process improvement and decision-making strategies at all levels</td>
</tr>
</tbody>
</table>
Start with interoperability

There’s a good reason for the ONC’s heightened emphasis on interoperability: It lays the groundwork for information exchange, population health management, and patient-centered care—which are the building blocks of healthcare reform. And providers have a way to go. In 2013, only about a third of doctors could exchange patient data.

Defined by HIMSS as “the ability of different information technology systems and software applications to communicate, exchange data and use the information that has been exchanged,” interoperability lays the cornerstone of robust analytics. You can’t make smart decisions and respond to change when your systems and platforms don’t connect. Business intelligence and clinical improvement start with safe, secure, timely data and easy access to cohesive information gleaned from multiple sources. Make sure your systems can communicate, pass information back and forth easily, and use that data intelligently.

On the plus side, 82% of providers recently surveyed by KLAS think they’ve been moderately or very successful on the interoperability front. Still, only 6% say they’ve achieved “advanced interoperability,” defined as “multi-faceted interoperability beyond common interfaces.” Further, only 6% of providers in a survey by Modern Healthcare Custom Media report that their data provides “full, system-wide decision support;” 20% have not yet begun the journey.

Scrub the data

It’s not glamorous. But surely you know the saying, “garbage in, garbage out.” Could that maxim be any truer than in healthcare, where every piece of data is complex? Cleansing and organizing your data on a common platform are important—so important, that if you don’t complete those steps, you’ll jeopardize all of your results.

Clean data also helps build high-level analytics capabilities that let you:

- **Describe**: How many patients were seen in my ER yesterday?
- **Diagnose**: Why was Obstetrics over budget?
- **Predict**: What will be the financial impact in one year if we acquire this practice? In two years? Three?
- **Prescribe**: Which nurses, with which certifications, are most likely to achieve better outcomes for patients with this diagnosis?
- **Execute**: How do we allocate more resources to promote flu shots among older adults?

“Advanced analytics allows you to be much more sophisticated in where you intervene and with what,” says Bob Nease, Ph.D., chief scientist for Express Scripts.

Still, you might have the smartest analytic algorithms in the world, but if your fields aren’t standardized, or your data sets don’t join the way they should, you’ll get partial, possibly misleading answers and suboptimal decisions that don’t drive value.
Seek one source of truth

See whether this scenario resonates with you: You want to know which doctors are using which supplies from the cardiac catheterization lab. A relatively simple question, right? Not if—in typically fragmented form—the cath lab uses a different numbering system than the OR and the supply chain to track items.

This disconnect keeps you from tying the expense of specific supplies to individual physicians and comparing them by usage and outcomes. What you need is reliable information and real insight into how to standardize supplies and improve care. What you’ve got are disjointed reports from disparate systems and a lot of data that’s not working. It’s a value-draining time-waster that has no place in your competitive, rapidly changing universe.

You need a tool that acts as an intermediary—a solution that does the heavy lifting and the integrating for you without you having to start from scratch. You need one source of truth—a platform that aggregates and integrates data from disparate systems to provide a consistent answer to everyone, wherever the question is asked.

Choose a vendor with a large data platform and in-depth knowledge of healthcare

Hospitals that embrace analytics will likely stay strong, despite declining reimbursements and other pressures, according to Tom Rohleder, PhD, of Mayo Clinic's Center for the Science of Health Care Delivery.
How providers hope to use analytics in the future

Healthcare providers hope to use data and analytics in the future to achieve:

- **47%** Improved financial outcomes
- **47%** Improved clinical outcomes
- **38%** Improved quality of care
- **44%** Improved operational efficiencies
- **22%** Managed population health
- **14%** Standardized delivery of care

Source: Modern Healthcare Custom Media, “Leveraging data and analytics to improve outcomes.”
Marry clinical and operational findings for maximum impact

You have the data. The problem is that it's in too many places. You can't do a lot with information scattered across multiple EMRs, financial systems, claims systems, and other repositories. This fragmentation—between individual systems, as well as across the broader clinical and business domains—puts a wall between you and the kinds of descriptive, predictive, and prescriptive insights that could take your efforts to track performance, report value, manage population health, and show accountability up a few notches.

Again, it starts with interoperability. “You have to execute properly on interoperability or you will get incomplete knowledge management,” says C. Martin Harris, MD, chief information officer at Cleveland Clinic.

That means integrating all of your clinical, operational, and administrative systems into an agile and unified intelligence resource that echoes elements of the learning health ecosystem envisioned by the ONC. It’s a level of integration that offers entry to an array of applications and analytics based on the secondary uses of data made possible with information exchange. Think analytics around personalized medicine, bio-surveillance, comparative effectiveness research, mobile health, care management, risk assessment, clinical decision support, and quality measures reporting.

Base decisions on real-time information

Whether you’re managing the health of a population, targeting resources to a high-risk subgroup, or treating an individual, it’s hard to improve processes, raise quality, or make solid decisions with old data. In healthcare, “old” is coming to mean anything less than real time.

“Without inbound, real-time data, the delivery system as we know it remains pretty much in the dark until the patient is at the doorstep, which wastes time, money and, in some cases, minutes critical to patient care,” says Derek Newell, CEO of Jiff, Inc.

Similarly, use three-month-old adjudicated claims data, and you have probably missed opportunities to improve processes or help patients take charge of their health. In the current environment, you need immediate feedback and continuous updates to monitor trends and know whether a process change is working, or patients are responding well to care. This is where an information exchange tool that aggregates data in real time becomes critical.