Session 2: Digging Deeper
APLD, EMR, and Specialty Data
Laura Jenkins Jirele
PMSA Virtual University

- PMSA Virtual University is conducting this 4 part webinar series focused on the introduction and understanding of the current and evolving data resources available in the Life Sciences industry.

- Beginning with this initial session which will build a foundation of understanding for Life Sciences data, each subsequent session is designed to build on the prior session to both expand and explore the evolving data available to the Pharmaceutical industry.
  - **Session 1**: Learn about core pharmaceutical datasets - retail and non-retail.
  - **Session 2**: Dig deeper into analytics with APLD, EMR, and Specialty data.
  - **Session 3**: The world of big data coming from the evolving digital world.
  - **Session 4**: Understanding data behind the complex new world of health care involving IDNs and ACOs.

- With a solid foundation of the data resources, PVU’ goal is to establish a venue for discussion & collaboration on best practices in analytics, marketing and sales operations.
Agenda

- Insight Quick Recap
  - Core Pharma Data
- Pharma Data Generation X
  - The New Normal
- APLD
- EMR/EHR
- Specialty
- Q&A

Goal: Right Data + Right Analytic + Right Answer
Core Data Recap

Session 1: Retail/Non-retail
Constant change is the new normal in Pharma...

The evolution and industry shift result in the need to answer more complex questions to drive strategy...

Knowledge, data and technology continue to evolve, providing opportunities to enhance, optimize and expand the insights to achieve success
The traditional core data sources have historically supported the majority of sales and marketing strategies.

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<thead>
<tr>
<th>Retail Pharmacy</th>
<th>Non-Retail</th>
<th>Managed Markets</th>
</tr>
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<tbody>
<tr>
<td>• Pharmacy-based</td>
<td>• Channel</td>
<td>• Formulary information</td>
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<tr>
<td>• Standard Rx information</td>
<td>• Standard Rx Data</td>
<td>• Affiliation information</td>
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<tr>
<td>• Physician linkage</td>
<td>• Optional: Physician Linkage</td>
<td>• Prescribing behavior</td>
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<tr>
<td>• Payer</td>
<td>• Optional: Patient Linkage</td>
<td>• Treatment behavior</td>
</tr>
<tr>
<td>• Optional: Patient</td>
<td>• Optional: Plan information</td>
<td>• Operating information</td>
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**Retail**

- Retail data is typically a combination of Point-of-Sale data and Mail-Order volumes of NCPDP transactions.

**Non-Retail**

- Non-Retail Sell-in Sales data provides an understanding of the distribution for where there is no storefront, namely outlets, hospitals, etc.

**Managed Markets**

- Managed Markets data provides an understanding of the payments, insurers and reimbursement for retail and mail-order products.

- **Sources**
  - • Health Plans
  - • Medical Claims
  - • Prescription Claims
  - • Contracts/Transactions
  - • Switch Networks

- **Types**
  - • Wholesaler
  - • Distributors
  - • Company’s direct sales
  - • EDI invoices

- **Sources**
  - • Formulary information
  - • Affiliation information
  - • Prescribing behavior
  - • Treatment behavior
  - • Operating information
  - • Pay Type & Payment Information
  - • Cost & patient pay

- **Types**
  - • Non-Retail product sell in sales data
  - • Channel (EDI) data
  - • Hospital operations data

- **Sources**
  - • Channel
  - • Standard Rx Data
  - • Optional: Physician Linkage
  - • Optional: Patient Linkage
  - • Optional: Plan information
Pharma Data Generation X

Keeping up with the Jones’s
Data has taken a huge leap forward with technology driving the acceleration...

Integration of new deeper detailed data is now mainstream

We can now do things faster, better and easier with leaps in technology

Better data, faster technology

We should be able to beat the competition!!
With patient level data, the names have been changed to protect the innocent

<table>
<thead>
<tr>
<th>Anonymized Patient Data</th>
<th>Longitudinal Patient Data</th>
<th>Patient Transaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIPAA</td>
<td>Hub Services</td>
<td>Clinical Trials</td>
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<tr>
<td>Cohort Studies</td>
<td>Patient Tracking Studies</td>
<td>HEOR</td>
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<tr>
<td>Longitudinality*</td>
<td>Specialty Distribution/Pharmacy</td>
<td>Product Lifecycle</td>
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APLD

Anonymized Patient Level Data
Patient Based Data—
*Everybody believes they want it and have to have it*

**What it can provide**
- Valuable insights about patient care / treatments
- Deeper insights about patient behaviors
- Refined Metrics & Analysis
- Compliance / Adherence
- New Patient Starts / Switching
- Better tool for calculating the value of a patient
- Improves forecasting capability
- Identifies treatment facilities

**What you need to know**
- What are the sources of the data?
- Does vendor data cover the entire country? Sub-national?
- How much history is available?
- Is the network closed, i.e. Humana or United Healthcare or integrated sample?
- What percent of distribution does an individual stream or provider represent?
- Can patient records be tracked or integrated across vendors?
- How many patients are tracked? Is it representative? Is it consistent?
- Can Physicians, Groups or facilities be identified for the patient?
- What are the limitations?

*While rich in insights, it doesn’t fit every scenario*
Patient Data – What Direction is it Going?

Understanding the basics of longitudinal data (anonymized patient-level data) is the key to using it to answer the right question in the right manner...

The key is to understand your question and the elements necessary to get to the right answer...

- **Traditional**
  - Based on POS
  - Drug
  - Dosing
  - Physician
  - Payer
  - Date

- **Rx Claims Records**
  - Cost fields
  - Primary/secondary payer
  - Reject/reversals

- **Medical Claims**
  - Diagnosis
  - Procedures
  - Location of Care
  - Referring, rendering physicians

- **EMR/EHR**
  - Lab results
  - Patient History
  - Weight/BMI

- **Specialty Data**
  - Rx - based
  - Medical Based

- **Hospital Data**
  - Inpatient care
  - Procedures
  - Drug administrations
  - History

- **Socio-economic**
  - Ethnicity
  - Household income
  - Media usage
Back to the basics:
With patient level data, you are now able to differentiate and connect the dots...

Differentiating a traditional prescription and a longitudinal prescription

### Traditional Rx Perspective

**January 2015**
- NRx for Product A

**March 2015**
- NRx for Product B

**May 2015**
- NRx Product B w/ 1Refill

**What we know**
- Dr Smith wrote 2 NRx
- Dr Jones wrote 1 Nrx
- Rx #1: 50 yr old female
- Rx #2: 50 yr old female
- Rx #3: 50 yr old female

**2 Doctors, 3 Patients**

### Using Patient Longitudinal Data

**January 2015**
- NRx for Product A

**March 2015**
- NRx for Product B

**May 2015**
- NRx Product B w/ 1Refill

**What we know NOW**
- All the above
- Dr Smith wrote an Rx for Patient A
- Dr Jones wrote an Rx for Patient A, tried a different drug
- Dr Smith then continued with Rx for Product B

**2 Doctors, 1 Patient**
Patient databases: What do you need to know?

Patient Claims Data comes in different constructs and should be aligned to address the objective or business question...

Longitudinal Patient Level Data

Open Databases
- Pharmacy (retail, MO, Specialty)
- Switch data

Closed Databases
- Payer
- Service Hubs

Institutional Databases
- Hospital
- EMR databases
- Practice Mgt.

Many providers use a combination of source types

- Larger, easier to project
- Gaps in sources (in hospital. mail)
- Patients drift in & out
- Skewed adherence metrics

- Smaller, more in-depth
- Yearly drop & add effect
- Strong formulary bias
- Annual patient drift

- Very small, extremely detailed
- Great for answering ‘why’
- Difficult to project
There are different levels of complexity in patient analysis which have variable client utility.
That fit in with all the different analytics relevant for each stage of the lifecycle

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<th>Phase II</th>
<th>Phase III</th>
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<td>Development</td>
<td>Discovery</td>
<td>Rejuvenation</td>
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<td>COPayment MCO</td>
<td>Pricing Range Study</td>
<td>Line Extension Optimization</td>
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<td>Market Assessment</td>
<td>MCO/Value Pricing Study</td>
<td>Competitive Recall Response Modeling</td>
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<td>Market Size &amp; Opportunity</td>
<td>Detailed Physician Segmentation</td>
<td>Erosion Tracking</td>
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<td>Patient Segmentation</td>
<td>Call Plan and Targeting</td>
<td>Pricing Re-evaluation</td>
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<td>Optimize Market</td>
<td>Identify Early Adaptors</td>
<td>Forecasting</td>
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<td>Coverage</td>
<td>Optimize Sampling Coverage</td>
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<td>Branding</td>
<td>Early Sampling Value Study</td>
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<td>Managed Care Landscape</td>
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<td>Thought Leader Analysis</td>
<td>Contracting and Rebates</td>
<td>TOOLBOX</td>
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<td>Patient Tracking</td>
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<td>Predictive Modeling</td>
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<td>Initial Sales Force Sizing</td>
<td>Pharmacy Program Intervention ROI</td>
<td>Factor Analyses</td>
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<td>Pre-efficacy Forecast</td>
<td>Patient Diagnosis Database</td>
<td>TOOLBOX</td>
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<td>Determine Value of a Patient</td>
<td>Primary Market Research</td>
<td>Ecometric Modeling</td>
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<td>Cost of Illness Economic Analysis</td>
<td>Ad Hoc Primary Research</td>
<td>Event Modeling</td>
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<td>Risk - Productivity Analysis</td>
<td>Promotional Response</td>
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<td>Revealed Preference</td>
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<th>Launch</th>
<th>Growth</th>
<th>Maturity</th>
<th>Rejuvenation</th>
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<td>Submission</td>
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<td>Patient Studies</td>
<td>Licensing/ Acquisition</td>
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<td>ATU Studies</td>
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<td>Consumer Satisfaction Testing</td>
<td>Promotional Sensitivity</td>
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<td>Promotion Message Development</td>
<td>Line Extension Analyses</td>
<td>Validate / Modify Promotions</td>
<td>Defense Planning</td>
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TOOLBOX

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EMR

Electronic Medical Records
As companies anticipate and plan for the emerging influx of EMR / EHR data, an understanding of data sourcing is critical...

Prescription Pads

Claims Records

EMRs / EHRs

Sourcing

Distribution data

Territory data

Physician level data

Patient level data

EMR/EHR data

• Outlets
• Products
• Sales $

Aggregations for

• Zip codes
• Products
• Sales Units
• Sales $
• Outlets

• Physician detail
• Products
• Sales units
• Sales $
• Outlets
• Managed care

• MD info +
• Treatments
• Patient counts
• Diagnosis
• Longitudinal links in Network
• Prescriptions

• Linked
• Patient History
• Treatments
• Physicians
• Testing
• Facilities
• Prescriptions
• Payments

Data Record Elements

These new elements provide even further detail...
This provides the industry with different types of data that can now deliver different insights and metrics

<table>
<thead>
<tr>
<th>Information Available</th>
<th>Rx Claim</th>
<th>Patient Data</th>
<th>EMR</th>
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<tbody>
<tr>
<td><strong>Physician Information</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Prescription Information</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Product form &amp; strength</td>
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<td>X</td>
</tr>
<tr>
<td>Quantity dispensed</td>
<td>X</td>
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<tr>
<td>Days supply</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>New or refill / # of refills authorized</td>
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<tr>
<td>Pharmacy Reimbursement / Member contribution</td>
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<tr>
<td>Date filled / Drug Codes / DAW Indicator</td>
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<tr>
<td><strong>Health Plan Information – Organization &amp; Location</strong></td>
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<tr>
<td><strong>Method of Payment / Rx Fulfillment</strong></td>
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<td><strong>Patient Information – Age, Gender</strong></td>
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<td>X</td>
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<tr>
<td><strong>Treatment Information</strong></td>
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<tr>
<td>Diagnosis / Treatment Plan / Treatment Duration</td>
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<td>X</td>
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<tr>
<td>Data of Service</td>
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<tr>
<td>Service Rendered / Location – office visit, X-Ray, etc.</td>
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<tr>
<td>Provider of Services – HCP, HCO</td>
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<td>X</td>
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<tr>
<td>Charges</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Ancillary Service Providers (Lab, Ambulatory)</td>
<td>X</td>
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<td>X</td>
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</table>
But there is still a few hurdles to have EMR as easily integrated to other sources

**Data Management**
- Data integration – at whose expense?
- Data sourcing – stability of patient linkage over time – across EMRs
- Data Cleansing – initial scrubbing and ongoing stewardship – by whom?

**Record integration**
- It could take years to create a stable source
- Growing base of companies & organizations offering some form of EHR/EMR

**Lack of Standardization**
- No common naming conventions
- Standardization is required to achieve the overall objective of lowering administration costs and improving outcomes

**Record Design**
- Designed for hospitals & medical offices
- Multiple template and data storage configurations will be encountered (locally, off-site, “cloud”, backed up, etc)

**Compliance and Privacy**
- HiPAA compliance
- Other privacy regulations may impede progress
- Public relations ramifications?
Specialty Products

The Future is Here
There is increasing importance on Pharma’s Specialty business - Specialty Pharmacy’s Value Proposition across Patient, Physician, Payer and Pharmaceutical firms

Specialty Pharmacies are different from traditional retail pharmacies because they distribute drugs that:

- Treat complex chronic and/or life threatening conditions
- Have a high cost per unit
- Require special storage, handling and administration
- Involve a significant degree of patient education, monitoring and management

But the new business landscape doesn’t follow the traditional method and requires a specialized support, delivery and tracking protocol
Pharma will typically contract with a Hub provider to manage the distribution of the product.

As the specialty pharmacy industry consolidates with PBMs, they offer:

- **Control of drug costs**
- **Discounts through rebates**
- **Management of data in a “mysterious and unknown world” (Specialty Markets)**
- **Oversight of Specialty market physicians**
- **Shifting from the “black box” of medical benefits to more visible pharmacy benefits**
- **Management of patient compliance, education, and support across the medical condition**
- **Management of adverse reactions and inefficient care across a fragmented healthcare system**
Specialty Markets have dynamics that are not easily integrated with traditional data sources, and may only provide a mosaic view...

Specialty products are administered to patients in many different types, methods & locations and no data provides the full continuum of care.

HEOR, EMR and Payer databases tend to be detailed but provide data and history for patients only when under their coverage.

A Pharma company can only see their sales from distribution or wholesaler data, but not their competitors...

Data from specialty pharmacies contains all the details but only for the products they are contracted to distribute...

Specialty pharmacy data from large data vendors is integrated which provides a broad and often nationally distributed sample but may be incomplete of all specialty pharmacy streams...

Most specialty market data is not projected and thus does not provide a stable national or sub-national view...
With the power of technology, the key to gaining the most value from all the data now available is through comprehensive integration of the resources.

"I believe that the data will set you free. At the end of the day, it's about how do you turn those pieces of information into insights that will improve business."

- Steven Rice, Executive VP, HR, Juniper Networks

The goal is to turn Data into Information & Information into Insight.

- Carly Fiorina, Former CEO - HP
With access to more granular, integrated data, the power to improve healthcare has never been more attainable.

But matching the right data to the right analytic to gain the right insight is the only way achieve success.
Questions?