My Journey Towards Understanding the Value of Healthcare Analytics

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Orchard Analytics Webinar

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Objectives

1. Explain medical reimbursement trends.
2. Describe a medical analytics database.
3. List the key resources needed for a medical analytics program.
4. Understand what medical analytics can contribute to your institution.

Disclosures

- I have no relevant disclosures.

Marshfield Clinic Health System, Inc.

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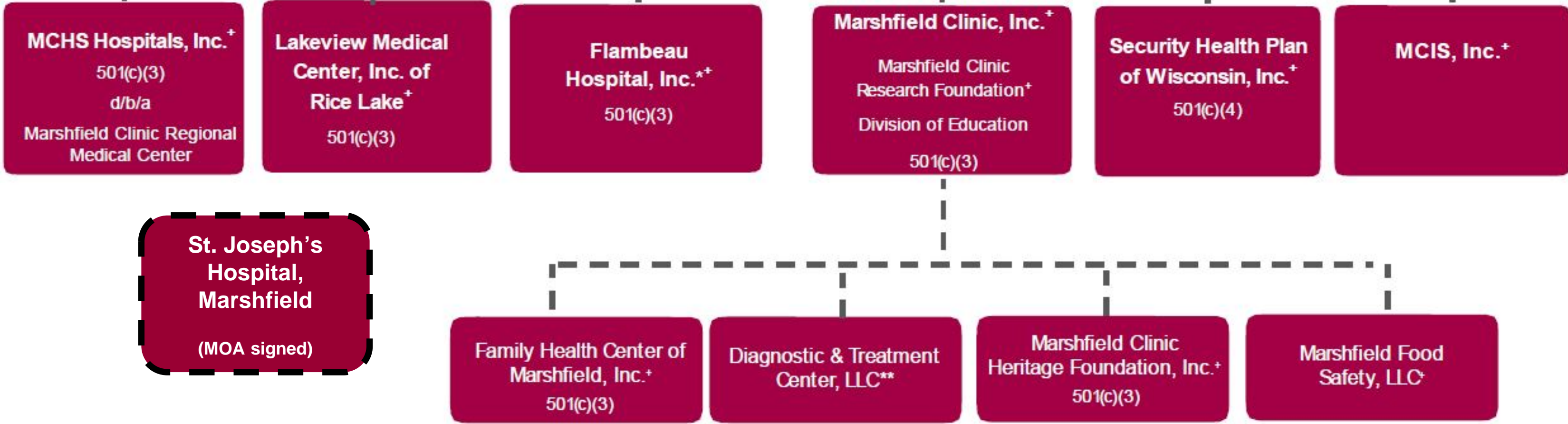

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6/1/2016

The Changing Landscape

→ OUT

Fee-for-service payment models

→ IN

Bundled payments incentivized by positive outcomes

http://hitconsultant.net/2015/05/11/ death-fee-service-healthcare/. 04/27/16

http://image.slidesharecdn.com/springone2gx2014holyintegrationtest-141104181654-conversion-gate02/95/the-quest-for-the-holy-integration-test-36-638.jpg?cb=1415203147. 04/27/2016

The Changing Landscape: 2015

- HHS sets bold new goals
  - By 2018, total Medicare $$:
    - 50% value-based alternative payment models
    - 42.5% value-based FFS
    - 7.5% traditional FFS

- Medicare Access and CHIP Reauthorization Act (MACRA) targets FFS & promotes "pay for value".

http://www.hhs.gov/about/news/2015/01/26/better-smarter-healthier-in-historic-announcement-hhs-sets-clear-goals-and-timeline-for-shifting-medicare-reimbursements-from-volume-to-value.html. 4/27/16

https://www.washingtonpost.com/news/wonk/wp/2015/01/26/the-obama-administration-wants-to-dramatically-change-how-doctors-are-paid/. 4/27/16

The Changing Landscape: Today

- HHS Health Care Payment Learning and Action Network → pushing private payers to value.
  - Now:
    - BC/ BS: 20% of $$
    - Aetna: 28% of $$ (going to 78% by 2020)
    - Medicare Comprehensive Care for Joint Replacement model.

- CMS has 27 ongoing model initiatives.

(https://innovation.cms.gov/initiatives/index.html#views=models. 08/10/2016)

MEDICAL ANALYTICS

A Primer

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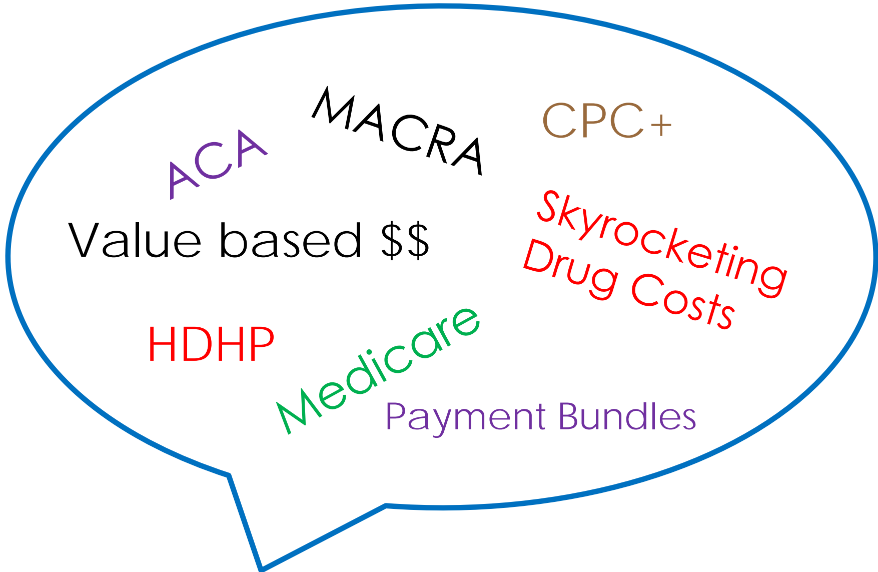
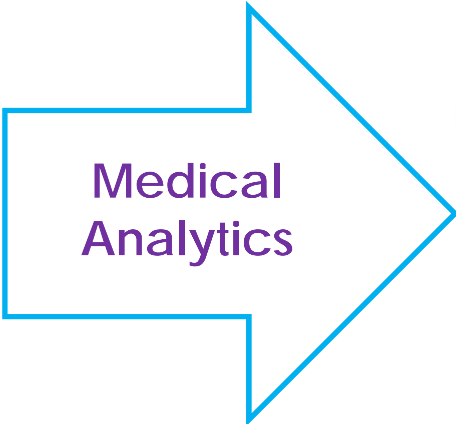

ACA
MACRA
CPC+
Value based $$
Skyrocketing Drug Costs
HDHP
Medicare
Payment Bundles


Medical Analytics

Analytics, Defined

- Analytics is the discovery, interpretation, and communication of meaningful patterns in data. Especially valuable in areas rich with recorded information, analytics relies on the simultaneous application of statistics, computer programming and operations research to quantify performance.

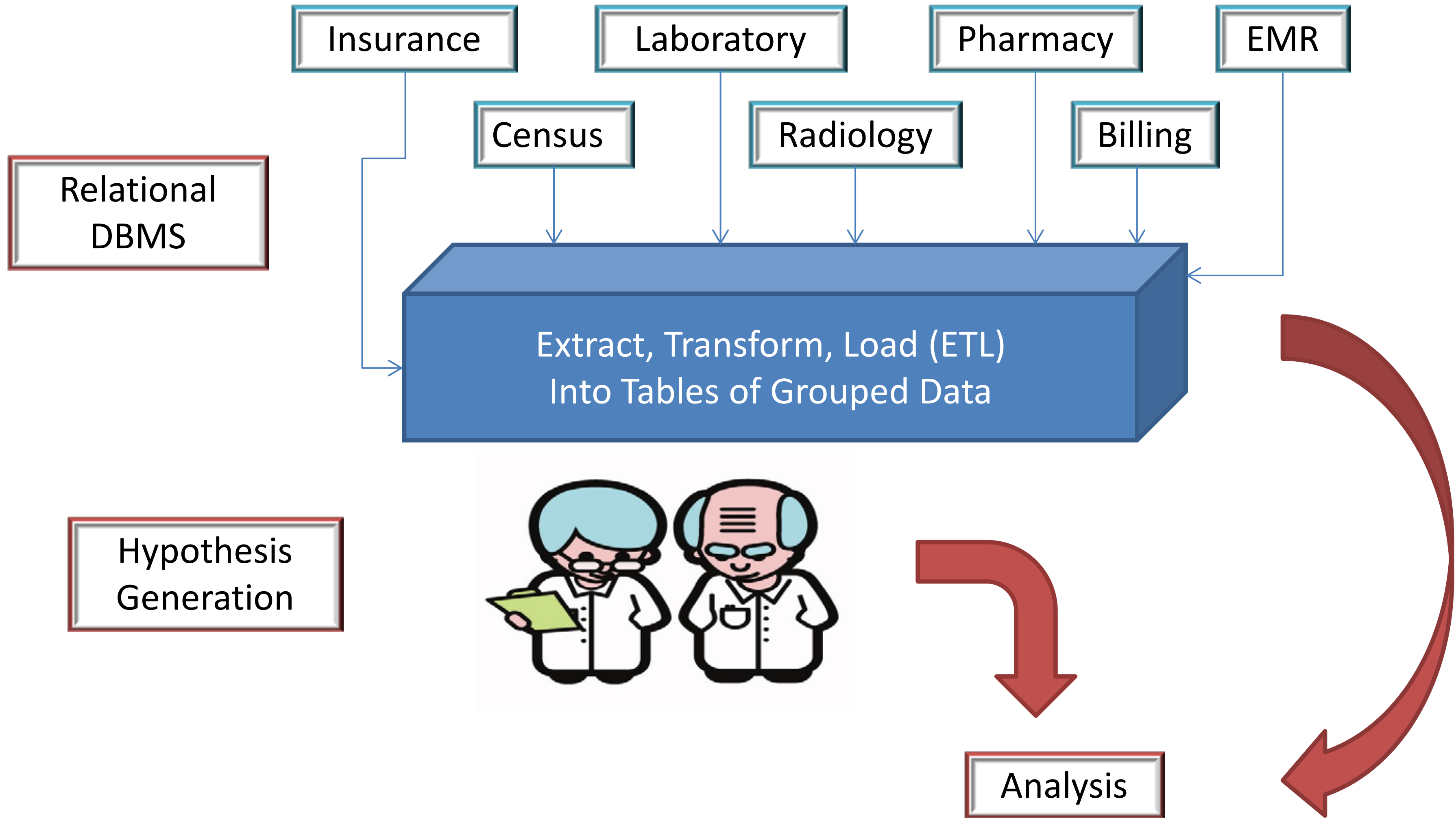
(Underscore added.)

(Wikipedia, 08/10/2016)

MA Program Components

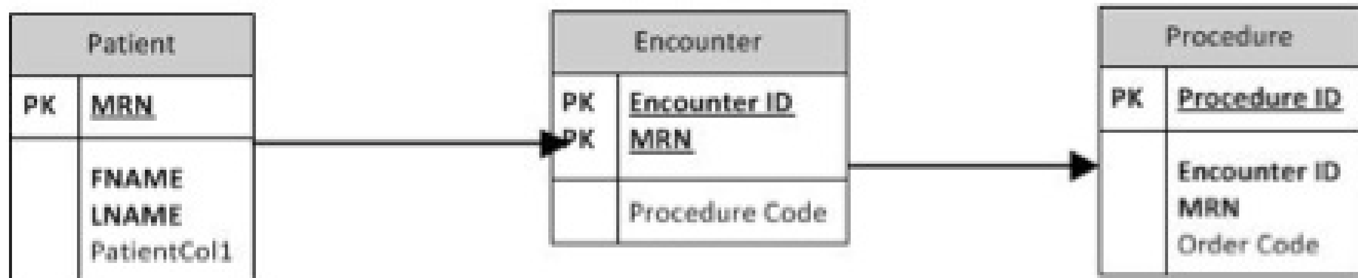
- A willing leadership
- An accepting medical staff
- A well-maintained relational DBMS
- Database analyst
- A team captain

MA – The Process



Analysis: How it Works

- DB analyst uses a command line format to create queries.
- Data from tables are linked by common unique identifiers.



- Formulae are added to perform calculations.
- Data are exportable to Excel.
- The analysis is often iterative.

Post-Analysis

- Use data internally or externally, e.g.
  - Instrument justification.
  - Intervention to drive change.
- Re-analysis

MY JOURNEY

Journal of Clinical Microbiology, May 1999, p. 1415–1418 Vol. 37, No. 5
0095-1137/99/$04.00+0
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Clinical and Financial Benefits of Rapid Bacterial Identification and Antimicrobial Susceptibility Testing

Joan Barenfanger,[1*] Cheryl Drake,[1] and Gail Kacich[2]

Laboratory Medicine[1] and Clinical Data Management,[2] Memorial Medical Center, Springfield, Illinois 62781

Received 30 November 1998/Returned for modification 12 January 1999/Accepted 6 February 1999

- Compared rapid AST reporting to routine AST reporting
- Analyzed rAST impact on mortality and morbidity
- Mortality rate was unchanged, but mean LoS was reduced by 2 days
- **Savings: $4mil / year ($5.8mil today)**

The Timeline

2015 | Week 1 | 5 | 9 | 13 | 17 | 21 | 25 | 29 | 33 | 37 | 41 | **2016**

Pam and I discuss the OSMA course
9/23/2015

First contact with Matt Modleski
11/2/2015

F/U with Pam: MA is a Go
11/9/2015

Webex with OMA: 2 pilot projects
12/7/2015

2 pilot projects selected
2/12/2016

OMA site visit planning begins
2/24/2016

Meet with MCIS Data Warehouse
2/29/2016

Data collection at MC begins
2/29/2016

OMA site visit
3/22/2016

OSMA course
4/11/2016

Visit to the MC C-suite
8/3/2016

THE PILOT PROJECTS

Project 1

- Thyroid function testing
  - Issue:
    - SoC: Screen with TSH; use confirmatory tests ***only if TSH is abnormal***
    - Sub-optimal test utilization leads to wrong diagnoses, missed diagnoses, & excess costs.
  - Questions:
    - Are TFT tests needlessly used?
    - How often and at what cost?

Project 1

Test Scenario	Annual Volume			Variable Materials Cost		
	Clinic	MSJH	Total	Clinic	MSJH	Total
FT4 given normal TSH; same req	8,835	715	9,550	$26,770.05	$2,166.45	$28,936.50
FT4 given no TSH	2,041	599	2,640	$6,184.23	$1,814.97	$7,999.20
FT3 given normal TSH	2,235	143	2,378	$8,805.90	$563.42	$9,369.32
FT3 given no TSH	650	323	973	$2,561.00	$1,272.62	$3,833.62
FT3 given high/low TSH and high/low FT4	584	40	624	$2,300.96	$157.60	$2,458.56
TT4 given normal TSH; same req	169	67	236	$469.82	$186.26	$656.08
TT4 given no TSH	49	105	154	$136.22	$291.90	$428.12
TT3 given normal TSH	8	2	10	$17.84	$4.46	$22.30
TT3 given no TSH	1	1	2	$2.23	$2.23	$4.46
TT3 given high/low TSH and high/low FT4	1	1	2	$2.23	$2.23	$4.46
Reverse T3 (all)	79	4	83	$395.00	$20.00	$415.00
Total			**16,652**			**$54,127**

Project 2

- Test Utilization Quality Audits
  - Issue:
    - TU quality audits now done by hand using a convenience sample.
    - Inefficient, small sample size.
  - Questions: Could an MA approach
    - Streamline TU quality audits?
    - Yield more detailed results?

Test Scenario	Annual Volume					Variable Materials Cost				
	Clinic	Hospital	LTC	Out-reach	Total	Clinic	Hospital	LTC	Outreach	Total
Liver Function Testing										
GGT given normal ALKP; same req	352	22	1	5	380	$211	$13	$1	$3	$228
Aldolase (all)	386	31	3	236	656	$1,034	$83	$8	$632	$1,758
Pancreatitis Testing										
Amylase AND Lipase; same req	2,728	3,228	14	97	6,067	$3,901	$4,616	$20	$138	$8,675
Vitamin D Testing										
1,25 dihydroxy Vitamin D given normal 25 hydroxy Vitamin D or same req	335	53	2	7	397	$5,025	$795	$30	$105	$5,955
General Testing for Inflammation										
ESR AND CRP; same req	15,249	3,331	233	334	19,147	$19,213	$4,197	$293	$420	$24,125
Other scenarios										
HVA given patient age > 20y	0	0	0	9	9	$0.00	$0.00	$0.00	$24	$24
VMA given patient age > 20y	42	2	0	38	82	$107	$5	$0.00	$96	$209
MMA given normal vitamin B12	573	31	8	5	617	$1,696	$91	$23	$14	$1,826
PAP within 30 days of PSA	5	0	0	0	5	$50.00	$0.00	$0.00	$0.00	$50
Coenzyme Q (all)	0	0	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00
Estriol not part of quad test	0	0	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00
Estrone w/o estradiol <30d	0	0	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00
Anemia workup										
Ferritin given CBC with elevated MCV	797	75	20	10	902	$2,980	$280	$74	$37	$3,373
Vitamin B12 given CBC with low MCV	476	19	8	6	509	$2,403	$95	$40	$30	$2,570
Folate (folic acid) given CBC with low MCV	187	12	5	1	205	$1,082	$69	$28	$5	$1,186
TOTAL					**28,976**					**$49,983**

How Did MA Perform?

- Project 1
  - Are TFT tests needlessly used? ***Yes***
  - If so, how often and at what cost? ***16,652 tests, $54,127***
- Project 2
  - Could MA streamline TU quality audits? ***Yes***
  - Could MA yield more detailed reports? ***Yes***

Why MA Now?

Why should I use MA to *reduce* my test volume (and my revenue) when FFS is still here?

- Test utilization committees are demanding it.
- Payers are denying "unnecessary" claims.
- Bundled payments have begun.

Why MA Now?

- Outcomes data can be used to objectively demonstrate the lab's true worth, justify lab expenditures, and solidify our position on the healthcare team.
- "In skating over thin ice, our safety is in our speed." Ralph Waldo Emerson.

In Summary

- FFS ***is*** going to be replaced by value-based schemes.

- Healthcare systems must prepare for this radical new environment in order to stay relevant.

- MA offers a powerful way to make this transition by leveraging ***all*** institutional data to improve outcomes and inform spending decisions.

Acknowledgments

- Brad Brimhall MD MPH, Matt Modleski, Ryan Howard. Orchard Analytics [1]
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- Thomas Fritsche MD PhD, Pam Carter, Barb Wirkus. Marshfield Labs [2]

1. A subsidiary of Orchard Software. Carmel, IN
2. A subsidiary of Marshfield Clinic Health System. Marshfield, WI