DISEASE MANAGEMENT OUTCOMES MEASUREMENT FOR DUMMIES...AND SMARTIES

How to measure outcomes validly using ingredients you already have in your kitchen

DMPC
Disease Management Purchasing Consortium Advisory Council
Gimme a V…Gimme an A…What’s that spell? V-A-L-I-D-I-T-Y
Some Frank Lloyd Wright stuff...

• Background information for credibility because…
• …What you are about to see is not “he said-she said,” me vs. benefits consultants. It’s math.
• Math is not a popularity contest. So it’s important to see not just the proof but also the qualifications of the prover
Hey, Butch, Who Are These Guys (DMPC --www.dismgmt.com-- and Al Lewis)

• Founder and first president of DMAA
• #1 DM procurement specialist in the US by dollar volume
• #1 database of chronic disease outcomes – you’ll see some
• #1 in “most influential” rankings (2004-2008) by Managed Healthcare Executive
• Two-time winner “Most Influential” DMAA
• Regular Op-Ed Contributor, San Francisco Chronicle
• Most frequent healthcare reform guest on Montel Williams
• “Invented Disease Management” according to Google
Innovation Evolution - Al Lewis not only invented disease ... 
Al Lewis not only invented disease management, he advanced the idea into one of the 
fastest-growing healthcare disciplines in less than a decade ... 
managedhealthcareexecutive.modernmedicine.com/.../12460 - Cached - Similar -  

The Disease Management Purchasing Consortium & Advisory Council 
"Al Lewis not only invented disease management [contracting], he advanced the idea into 
one of the fastest-growing disciplines. " Managed Care Executive ... 
www.dismgmt.com/frame12.htm - Cached - Similar -  

Disease Management Audioconferences 
And then, in the words of co-presenter Al Lewis, who can be googled as having invented 
disease management, you can measure outcomes "using ingredients you ... 
www.dmconference.com/ - Cached - Similar -  

Disease Management Audioconferences: Agenda 
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www.dmconference.com/dmaudio20091203/agenda.html - Cached -  

Show more results from www.dmconference.com 

Disease Management MOMENTS | Article from Managed Healthcare ... 
VISIONARIES Al Lewis not only invented disease management, he advanced ... service for 
the Disease Management Purchasing Consortium, which Lewis launched in ... 
www.highbeam.com/doc/1P3-1005822671.html - Cached -  

Inventor of Disease Management Calls Current Texas Medicaid ... 
Sep 3, 2009 ... Al Lewis, who is credited with having "invented disease management" by 
Google and who is ranked #1 in all Managed Healthcare Executive ... 
www.docstoc.com > Current Events > Press Releases - Cached -  

StayWell Custom Communications Cited as "Best Wellness Vendor" in ... 
Sep 4, 2009 ... Google credits founder DMPC Al Lewis with having "invented disease 
management." Managed Healthcare Executive consistently ranks Lewis as the ... 
www.staywellcustom.com/best-wellness-vendor.asp - Cached -  

Incorrect Cost Measurement 
... who wrote the official Disease Management Association of America Dictionary of Terms, 
and Al Lewis, who invented disease management contracting (source; ... 
www.rncasemanager.com/.../IncorrectCostMeasurementFoundOverstateSavings.asp - 
Cached -  

DMPC
*WARNING, WILL ROBINSON*  
***EXTREME DANGER***

- This presentation will make you THINK and I want you to CHALLENGE my proof and any numbers I put up (via the email link disease_mgmt@aol.com), because at the end of it there should be NO DOUBT that there is indeed a valid measurement methodology out there

Any challenge where I am wrong earns a 50% discount on ANYTHING from DMPC
I know that sounds strong and I don’t wanna sound like one of those embittered people like
I know that sounds strong and I don’t wanna sound like one of those embittered people like
Agenda

• So before we start let’s lighten things up with some great trivia

• How it is impossible not to regress to the mean in a pre-post measurement, even when it covers the whole population, adjusted for trend
  – The “whole population” is not the whole population
  – The “trend” is not the trend

• How to develop a valid event rate-driven model to determine your health plan’s success
Let’s look at some of the more quantitative facts
NO WONDER WE'RE FAT

During your lifetime, you will eat sixty thousand pounds of food—the weight of six elephants.

The average American chews 190 sticks of gum, drinks 600 sodas and 800 gallons of water, and eats 135 pounds of sugar and 19 pounds of cereal per year.

The biggest-selling restaurant food is french fries.

The estimated number of M&Ms sold each day in the United States is two hundred million.

The amount of potato chips Americans eat each year weighs six times more than the Titanic.

A can of SPAM is opened every four seconds.

Americans on average eat eighteen acres of pizza every day. Saturday night is the biggest night of the week for eating pizza.

Dunkin' Donuts serves about 112,500 doughnuts each day.

More popcorn is sold in Dallas than anywhere else in the United States.

Two million different combinations of sandwiches can be created from a Subway menu.

p. 99: “Dunkin Donuts serves 112,500 donuts a day”
The largest hamburger in the world weighed in at 5,520 pounds.

The largest ketchup bottle is a 170-foot water tower.

INTERNATIONAL PALETTES

Dinner guests during the medieval times in England were expected to bring their own knives to the table.

In eighteenth-century France, visitors to the royal palace in Versailles were allowed to stand in a roped-off section of the main dining room and watch the king and queen eat.

In certain parts of India and ancient China, mouse meat was considered a delicacy.

Each year, Americans spend more on cat food than on baby food.

It is estimated that Americans consume ten million tons of turkey on Thanksgiving Day. Due to turkey’s high sulfur content, Americans also produce enough gas to fly a fleet of seventy-five Hindenburgs from Los Angeles to New York in twenty-four hours.

p. 103: “Americans consume 10-million tons of turkey on Thanksgiving Day.”
The original [1967] Australian fifty-cent piece had $100 of silver in it.
Let’s Go On with the Show

• Back to the agenda. Thanks for indulging me in the digression. Now if there aren’t any questions we’ll get on with the show
Let’s Go On with the Show

• Back to the agenda. Thanks for indulging me in the digression. Now if there aren’t any questions we’ll get on with the show
• Gotcha!
• …Why did I show this trivia from the #1-bestselling trivia book?
Here’s Why I showed this trivia: What do all these “facts” have in common?

- They are all dead wrong
- Each is off by almost TWO orders of magnitude

And yet no reader, no reviewer, no editor noticed…and the book has been in print for 3 years. No one thought…
NO WONDER WE'RE FAT

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Two million different combinations of sandwiches can be created from a Subway menu.

Watch what happens when you THINK about stats that you read

p. 99: “Dunkin Donuts serves 112,500 donuts a day”

Did you think: “Wait, there must be thousands of Dunkin Donuts stores—that’s only a few dozen donuts a day/store”?
The largest hamburger in the world weighed in at 5,520 pounds.

The largest ketchup bottle is a 170-foot water tower.

INTERNATIONAL PALETTEs

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p. 103: “Americans consume 10-million tons of turkey on Thanksgiving Day.”

Did you think:
“Wait, that’s 20-billion pounds, almost 100 pounds per person”?
the original [1967] Australian fifty-cent piece had $100 of silver in it.

Did you think:
“Wait, a country would go bankrupt if it did that,” or:
“Wait, that coin would have weighed a pound”?

KISSABLY FRESH

Colgate faced a big obstacle marketing toothpaste in Spanish-speaking countries. Colgate translates into the command “go hang yourself.”

More people use blue toothbrushes than red ones.
What do all these “facts” have in common?

• They are all dead wrong
• Not even close
• Each is off by almost TWO orders of magnitude

And yet no reader, no reviewer, no editor noticed…and the book has been in print for 3 years. Think this was a fluke? That this can’t happen in disease management? Think again…
What did we just learn?

- Most people won’t challenge something that an expert tells them in a credible setting (example: it’s in a bestselling book)
- It is shockingly easy for an expert to say things that demonstrably make no sense and yet be believed because no one is reading things critically

Let’s take examples from our own industry
Savings by Category of Utilization per 1000 members per month (2008 vs. 2007)
(note: The difference between the bars is the savings)
Savings by Category of Utilization per 1000 members per month (2008 vs. 2007)

(note: The *difference* between the bars is the savings)
Savings by Category of Utilization per 1000 members per month (2008 vs. 2007)
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Savings by Category of Utilization per 1000 members per month (2008 vs. 2007)
(note: The difference between the bars is the savings)
Summarizing the preceding obvious and/or massive errors

- Should be no decline in MD visits or drug costs
- Drug costs way too high ($2000/month?)
- Admissions/ER way too low
- Y-axis totally mislabeled (see title – “per 1000”)
Now let’s name names. What you are about to see...

- One page from the most famous and oft-cited justification for savings from patient-centered medical home in Medicaid. Mercer did the analysis for North Carolina.

- Until I blew it up, it was in the category with the turkey and the donuts – assumed to be true because “experts” said it. Even US Senators were believing it.
## AFDC - Specified Categories of Service

<table>
<thead>
<tr>
<th>Age and Sex Description</th>
<th>Member Months</th>
<th>SFY06 Projected Benchmark PMPM</th>
<th>Actual SFY06 PMPM</th>
<th>Estimated Savings from Benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 year M &amp; F</td>
<td>670,070</td>
<td>$411.38</td>
<td>$186.60</td>
<td>$150,479,255</td>
</tr>
<tr>
<td>1 - 13 years M &amp; F</td>
<td>4,672,745</td>
<td>$102.70</td>
<td>$100.37</td>
<td>$10,901,303</td>
</tr>
<tr>
<td>14 - 18 years F</td>
<td>506,909</td>
<td>$224.57</td>
<td>$166.58</td>
<td>$34,614,787</td>
</tr>
<tr>
<td>14 - 18 years M</td>
<td>547,434</td>
<td>$112.82</td>
<td>$109.84</td>
<td>$1,632,831</td>
</tr>
<tr>
<td>19 - 44 years F</td>
<td>1,167,464</td>
<td>$413.69</td>
<td>$350.99</td>
<td>$62,606,031</td>
</tr>
<tr>
<td>19 - 44 years M</td>
<td>174,219</td>
<td>$452.90</td>
<td>$310.30</td>
<td>$24,844,077</td>
</tr>
<tr>
<td>45 years &amp; up M &amp; F</td>
<td>133,840</td>
<td>$665.60</td>
<td>$563.62</td>
<td>$13,649,997</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>7,962,681</td>
<td><strong>$201.23</strong></td>
<td><strong>$163.70</strong></td>
<td><strong>$298,817,281</strong></td>
</tr>
</tbody>
</table>

1. CCNC/ACCESS only member months for SFY06.
2. The Statewide Benchmark SFY06 PMPM was calculated using the historical 36 months of data from SFY00, SFY01, and SFY02. The PMPM shown here is calculated by weighting each rate cell’s SFY06 base PMPM with the actual CCNC/ACCESS member months distribution by rate cell for SFY06.
3. Calculated using the date of service data for SFY06; represents all CCNC/ACCESS program (I, II, and III) costs for dates of service from July 2005 through June 2006.
4. Projected savings calculated using the SFY06 actuals, the benchmark minus the actual, multiplied by the actual SFY06 CCNC/ACCESS member months, equals the projected savings.
How come nobody checked the <1-y.o. figure of 54% total savings? The savings...

• …Couldn’t have come from pediatricians – their costs go up in a patient-centered medical home (higher pay)
• …Couldn’t have come from drugs – compliance should increase in medical homes
• …Couldn’t be from normal deliveries declining – they rose (see next slides)
• …Couldn’t have come from things that also happen to older kids – Age 1-13 cost numbers stayed the same
• …There is only one major category left: It MUST have been all from neonates – the hospitalization reduction in neonates must have been huge (>90%?), to support a 54% overall savings if it’s the only savings source and other things went up or stayed the same
• So let’s check the neonatal discharge rates for North Carolina
### Actual days of care for NC normal and neonates

#### Baseline in Red

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DRG</td>
<td>Non-normal discharges</td>
<td>33,631</td>
<td>30,227</td>
<td>27,776</td>
<td>29,192</td>
<td>30,594</td>
<td><strong>32,390</strong></td>
</tr>
<tr>
<td>LOS (length of stay), 386-390 days (mean)</td>
<td>216.9</td>
<td>207.9</td>
<td>196.7</td>
<td>207.9</td>
<td>219.7</td>
<td><strong>229.7</strong></td>
<td>240.7</td>
</tr>
<tr>
<td>Discharge days</td>
<td>7</td>
<td>7</td>
<td>1</td>
<td>6</td>
<td>0</td>
<td><strong>9</strong></td>
<td>9</td>
</tr>
</tbody>
</table>

#### Diagnosis Related Group 391, Normal newborn

| Total number of 391 discharges | 79,875 | 80,419 | 81,090 | 85,441 | 87,356 | **89,643** | 93,280 |
| LOS (length of stay), days (mean) | 159.7 | 160.8 | 162.1 | 179.2 | 183.4 | **188.2** | 195.3 |
| Discharge days | 113,50 | 110,64 | 108,86 | 114,63 | 117,95 | **122,03** | 126,32 |

#### DMPC - Disease Management Purchasing Consortium Advisory Council

| Total newborns | 6 | 6 | 6 | 3 | 0 | 3 | 5 |
| % Non-normal discharges | 29.6% | 27.3% | **25.5%** | 25.5% | 25.9% | **26.5%** | 26.2% |
| % Normal discharges | **70.4%** | 72.7% | 74.5% | 74.5% | 74.1% | 73.5% | 73.8% |
To summarize North Carolina...

<table>
<thead>
<tr>
<th>Study</th>
<th>baseline period</th>
<th>change</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Carolina % non-normal births (of total births)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000-</td>
<td>2006</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>27.5</td>
<td>26.5</td>
</tr>
<tr>
<td>%</td>
<td>%</td>
<td>1.0%</td>
</tr>
</tbody>
</table>
North Carolina: >90% needed, 1% found*

- Maybe the neonatal rate would have gone way up absent medical home
- Let’s compare North Carolina to South Carolina to test that hypothesis

*technically speaking, that is 1 percentage point, not 1%
Using South Carolina’s neonatal rate as a “control” for North Carolina’s – maybe SC went way up?

<table>
<thead>
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<th>Study</th>
<th>baseline</th>
<th>period</th>
<th>change</th>
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<td></td>
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<tr>
<td></td>
<td>27.5 %</td>
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<td>1.0%</td>
</tr>
<tr>
<td>South Carolina % non-normal births (of total births)</td>
<td>2000-02</td>
<td>2006</td>
<td></td>
</tr>
<tr>
<td></td>
<td>26.0 %</td>
<td>25.5 %</td>
<td>0.5%</td>
</tr>
</tbody>
</table>
Hunh? NC, the “poster child” for medical homes in Medicaid made a magnitudinal error invalidating, by implication, all the savings (since the other savings were calculated the same way)?

• There are large errors all over this field—that is why you are on this webinar
• It is much easier to spot them elsewhere than in your own shop (Freud)
• Next we talk about WHY these errors happen and HOW to identify them
Back to the Agenda – Item #2

1. Some great trivia

2. How it is impossible not to regress to the mean in a pre-post measurement, even when you are told it covers the whole population, adjusted for trend
   – The “whole population” is not the whole population
   – The “trend” is not the trend

3. How to develop a valid event rate-driven model to determine your health plan’s success
Examples of Classic consultant/vendor Fallacies

• “Measure on the whole population to avoid regression to the mean”
  – “We use two years of baseline to avoid regression to the mean”

• “Use the trend in the non-chronic population to estimate what the trend would have been in the chronic population.”
Mistake #1: Why measuring on the vendor-defined “whole population” is not really measuring on the entire population

• This is called a “heads or tails” mistake
• Imagine everyone with a condition is a coin. “Heads” means the health plan/vendor KNOWS they have the condition. “Tails” means they don’t.

How can a vendor/health plan not know about someone if they have the condition in question?
Why might a health plan not know a member has a condition (“Tails”)?

1. Member is new to the plan
2. Member is too mild to have disease-identifiable claims
3. Member has disease-identifiable claims, but not enough to trigger the algorithm (for instance, you need two 250.xx MD visits to be classified as diabetic)
4. Member is non-compliant and doesn’t fill scripts
5. Member is misdiagnosed
6. Member is correctly diagnosed but the physician doesn’t want to enter correct diagnosis in their file
7. Member does not himself or herself know he/she has the condition.
8. Maybe they got diagnosed too recently for the claim to have shown up

Clearly there are a lot of tails
The effect of Tails on measuring savings

- Vendors (and internal DM programs for health plans) only measure the “whole population” they know about. They “flip” the Heads and take credit for the 50%+ reduction in Heads.
  - If it’s a 60% reduction (for example) they should only take credit for 10%
- But they don’t flip the Tails and offset the 50% reduction in Heads-turning-Tails with the Tails-turning-Heads
- They do indeed count the Heads…*in the next year’s numbers once they are already Heads and they can regress them to the mean again*

Let’s do a hypothetical and then a real example and then fix it
In this pre-post “whole population” example

• Assume that “trend” is already taken into account (“trend” itself – what “would have happened absent the program” -- is next)
• Focus on the baseline and contract period comparison
Base Case: Example from Asthma
First asthmatic has a $1000 IP claim in 2007 ("Heads" while #2 is a "Tails")

<table>
<thead>
<tr>
<th></th>
<th>2007 (baseline)</th>
<th>2008 (contract)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthmatic #1</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>Asthmatic #2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost/asthmatic</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What is the cost/asthmatic in the baseline?

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The cost/asthmatic in the baseline is $1000 because only the “Heads” are measured

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Cost/asthmatic in baseline?

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<tr>
<td>Asthmatic #2</td>
<td>0</td>
<td>1000</td>
</tr>
<tr>
<td>Average Cost/asthmatic</td>
<td>$1000</td>
<td></td>
</tr>
</tbody>
</table>

Vendors don’t count #2 in 2007 average because he can’t be found – a “Tails”
Cost/asthmatic in contract period?

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>$1000</td>
<td>$100</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Asthmatic #2</th>
<th>2007 (baseline)</th>
<th>2008 (contract)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$1000</td>
<td></td>
</tr>
</tbody>
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<table>
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<tbody>
<tr>
<td>$1000</td>
<td>$550</td>
<td></td>
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($550 is the increase of $1000 in the second asthmatic’s cost since 2007 didn’t count – the “Tails” turning to “Heads”)


Asthmatic #2 was only counted – going forward -- AFTER he flipped to “Heads”

• It doesn’t matter whether you use prospective identification (“once chronic, always chronic”) or annual requalification (member must “trigger” every year), both “approved” consultant methodologies

• You’d have to use “retrospective identification,” and go back and count #1 in 2007

• Let’s look at a real case of heads-tails (note: both previous examples shown also have this error but it is too much detail for a webinar – anyone who wants to discuss can call me)
Retrospective ID: Once you KNOW that #2 has asthma, you add him into the baseline

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$500
Asthmatic #2 was only counted –going forward -- AFTER he flipped to “Heads”

• It doesn’t matter whether you use prospective identification (“once chronic, always chronic”) or annual requalification (member must “trigger” every year), both “approved” consultant methodologies

• (You’d have to use “retrospective identification,” and go back and count #1 in 2007)

• Let’s look at a real case of heads-tails (note: both previous examples shown also have this error but it is too much detail for a webinar – anyone who wants to discuss can call me)
Example #1: Measuring only the “Heads” in the contract period yields huge decline in hospitalization rate

**Health Advance Hospitalization Rate**

- Baseline: 16.73%
- Post: 6.62%
What happened...

• The vendor put only last year’s known utilizers in the baseline, and only followed them going forward.
  – A classic case of flipping the coins and taking credit for the savings
Examples of Classic Fallacies

• “[We] measure on the whole population to avoid regression to the mean”
• “[We] use the trend in the non-chronic population to estimate what would have been the trend in the chronic population.”
How vendors and consultants apply “trend” today

• They separate the population into “diseased” and “non-diseased.”
• They assume the diseased population would have increased at the same rate as the non-diseased, absent the DM program
• Let us assume that – were it possible to truly separate the groups – non-diseased trend is a valid proxy for disease trend
• However, it turns out that many diseased people slip into the non-diseased trend and as a result trend will always be overstated for the non-chronic population
Recall these two asthmatics? They are each part of their respective trends – **diseased** and **non-diseased**

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Asthmatic #1-</td>
<td>1000</td>
<td>100</td>
</tr>
<tr>
<td>Diseased trend</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asthmatic #2-</td>
<td>0</td>
<td>1000</td>
</tr>
<tr>
<td>Non-diseased trend</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Impact on trend

- The diseased cohort (asthmatic #1) fell by 90%
- The non-diseased cohort (at least this person in the cohort) rose by an infinite amount
  - Including people like this in the non-diseased trend will obviously raise it! (Very few non-diseased people get into the diseased trend – you’d have to be misdiagnosed)
- It’s invalid enough already not to include #2 in the diseased cohort. To include his trending from $0 to $1000 in the non-diseased trend overstates the non-diseased trend and therefore overstates the savings from disease management
How would you know if this is happening to you? If any one of the following is true...

- Is your stated ROI > 2:1?
- Are there components of the overall ROI that are massively negative and positive?
- Is your claimed percentage savings > than the total hospital/ER spending for the condition itself (about 8% of overall claims for diseased population)?
- Are you being told you are saving money in asthma?
- Are you seeing reductions in claims where you wouldn’t expect, like drugs?
- Is there so much complexity in your RFPs and reconciliations that you really don’t understand where the numbers are coming from?
- Is your prevalence appearing to rise every year while your costs/disease member fall? (That’s finding “heads” and holding onto them as they flip back to tails) – Example of this in Savannah presentation
- If the vendor didn’t provide/consultant didn’t insist on a “plausibility check” based on benchmarking...
1. Some great trivia
2. How it is impossible not to regress to the mean in a pre-post measurement, even when it covers the whole population, adjusted for trend
   - The “whole population” is not the whole population
   - The “trend” is not the trend
3. How to develop a valid event rate-driven model to determine your health plan’s success (“using ingredients you already have in your kitchen”)
What is a plausibility test?

• You do it all the time…outside DM
• An easy way to directionally check results
• Measure total event rates for diseases being managed, like you’d measure a birth rate. Couldn’t be easier
  – Ask me for the specific directions. They’re free from DMPC to insurers/employers. See next page for a part of it
Total event rates tracked by disease: Primary-coded ER and IP events

<table>
<thead>
<tr>
<th>Disease Program Category</th>
<th>ICD9s (all .xx unless otherwise indicated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>493.xx (including 493.2\textsuperscript{[1]})</td>
</tr>
<tr>
<td>Chronic Obstructive Pulmonary Disease</td>
<td>491.1, 491.2, 491.8, 491.9, . 492, 494, 496, 506.4</td>
</tr>
<tr>
<td>Coronary Artery Disease (and related heart-health issues)</td>
<td>410, 411, 413, 414</td>
</tr>
<tr>
<td>Diabetes</td>
<td>250</td>
</tr>
<tr>
<td>Heart Failure</td>
<td>428, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93, 425.0, 425.4</td>
</tr>
</tbody>
</table>

\textsuperscript{[1]} 493.2x is asthma with COPD. It could fit under either category but for simplicity we are keeping it with asthma.
What is a plausibility test?

• You do it all the time…outside DM
• An easy way to directionally check results
• Measure total event rates for diseases being managed, like you’d measure a birth rate. Couldn’t be easier
  – Ask me for the specific directions. They’re free from DMPC (and can be purchased from DMAA). See next page
• Example from previous asthma hypothetical
Recall this Cost/asthmatic in contract period?

<table>
<thead>
<tr>
<th></th>
<th>2007 (baseline)</th>
<th>2008 (contract)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthmatic #1</td>
<td>1000</td>
<td>100</td>
</tr>
<tr>
<td>Asthmatic #2</td>
<td>0</td>
<td>1000</td>
</tr>
<tr>
<td>Cost/asthmatic</td>
<td>$1000</td>
<td>$550</td>
</tr>
</tbody>
</table>
Asthma events in the payor as a whole – the “plausibility test”

<table>
<thead>
<tr>
<th></th>
<th>2007 (baseline)</th>
<th>2008 (contract)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthmatic #1</td>
<td>1000</td>
<td>100</td>
</tr>
<tr>
<td>Asthmatic #2</td>
<td>0</td>
<td>1000</td>
</tr>
<tr>
<td>Inpatient 493.xx</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>events/year</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Plausible?

1. Consultant/vendor measurement methodology: 45% reduction
2. Plausibility test: no change

You need to decide whether (1) or (2) gives you a more valid answer
It’s not just that plausibility-checking is easy and obvious

• You do it all the time…outside DM
• An easy way to directionally check results
• Measure total event rates for diseases being managed, like you’d measure a birth rate. Couldn’t be easier
  – Ask me for the specific directions. They’re free from DMPC (and can be purchased from DMAA). See next page
• Why this approach answers really basic questions
Plausibility Analysis example explanation: Heart Disease

• You have spent millions managing heart disease for several years, right?
• In order to reduce heart attacks (and related events), right?
• But…
Plausibility Analysis example explanation: Heart Disease

• You have spent millions managing heart disease for several years, right?
• In order to reduce heart attacks (and related events), right?
• But...[some really basic questions]
  – Do you even know your heart attack rate?
    • 50% off anything from DMPC for anyone who can tell me the heart attack rate in the commercially insured <65 population in the US (or your own population)
Plausibility Analysis example explanation: Heart Disease

- You have spent millions managing heart disease for several years, right?
- In order to reduce heart attacks (and related events), right?
- But…
  - Do you even know your heart attack rate?
  - If you don’t (and you don’t), how do you know whether it has declined since you started the program?
  - How do you know how it compares to others?
- How can you do a DM program without knowing these three pieces of data?
This is precisely what you learn with a plausibility benchmarking test

- **WHAT** are my rates of adverse events (like heart attacks)
- **HAVE** they declined since I started a program
  - **WHAT** would they have likely been without a program
- **HOW** do they compare to others?
What is a plausibility test?

• You do it all the time…outside DM
• An easy way to directionally check results
• Measure total event rates for diseases being managed, like you’d measure a birth rate. Couldn’t be easier
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• Example from Harvard-Pilgrim (#1-ranked health plan by JD Power and tied for #1 with Providence in DMPC database)
Benchmarking Example

- Harvard-Pilgrim Health Care (HPHC)
- National Averages
- Both in comparison

HPHC -- and Providence Health Plan in Oregon -- had the lowest adverse event rates in the country in 2007 so don’t automatically expect such good results (note: other excellent performers include BCBS in AL, FL, IA, MA, MD, MN, NE, HealthPartners, Connecticare, HAMP, others on www.dismgmt.com website)
ER and Inpatient Events Per 1,000 Commercial Members
All Chronic Conditions

![Graph showing incidence rate per 1,000 over years for different conditions.]

- ASTHMA
- CAD
- CHF
- COPD
- DIABETES

Pre DM
- Partial DM
- Full DM

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alewis@dismgmt.com 781 856 3962
Compare to National Average

• National Average
  – Based on 25+ commercial health plans and employers
    • Those which are not demographically similar are removed from the pool
    • Medicaid and public sector employers are separate
    • All data “QC-ed” by me when it comes in
ER and Inpatient Events Per 1,000 Commercial Members Your Plan Compared To National Average Asthma

ER & INPT. Events per 1,000

Harvard Pilgrim
National Avg.

Pre DM
Partial DM
Full DM

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ER and Inpatient Event Rates (Commercial)
Harvard Pilgrim v.s. National Average of 25+ health plans

<table>
<thead>
<tr>
<th>Years</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER &amp; INPT. Cardiac Events per 1,000</td>
<td>3.00</td>
<td>3.50</td>
<td>4.00</td>
<td>4.50</td>
<td>3.50</td>
<td>3.00</td>
<td>2.50</td>
<td>2.00</td>
</tr>
</tbody>
</table>

Diabetes & Cardiac Full Implementation

Diabetes Program Introduced

Cardiac Program Introduced

DMPC | Disease Management
Purchasing Consortium Advisory Council
ER and Inpatient Events Per 1,000 Commercial Members
Harvard Pilgrim Compared To National Average
Total Events For All 5 Common Chronic Conditions
Note that this is only a plausibility test

• It does not include comorbidities
• It does not reflect “whole patient” measurement

You can do that with the DMPC “comorbidity multiplier” which I am happy to send you gratis
Other advantages of measuring event rates besides validity and simplicity

• Requirement for DMPC Certification
• Requirement to win a HIRC award as a “best payor in disease management” like Savannah
• Also, you CAN create a valid ROI from this (I’ll send the tool free)
Calculating ROI validly from event rates

- Size of ROI from DM: lower
- Emphasis on ROI from DM: higher
Impact

- Size of ROI
- Emphasis on ROI: higher

- Credibility of ROI: Priceless
Followup housekeeping info

Write to alewis@dismgmt.com

• Tools, described in the promotion you received, free from DMPC to states/insurers/employers to do event rate analysis
• CD discounted for attendees
• DMPC membership/certification/procurement info

Go to www.dismgmt.com

• Book on DM DMbook.htm
• Mailing list for future webinars and seminars reminder.htm
• Advanced version of this: Critical Outcomes Report Analysis Certification certification_rules.htm
• Upcoming book partly on health economics (apolitical but endorsed by James Carville) EcBook-OOBonomics/

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Next Up: City of Savannah

• One of the best state/local programs
• Perfect example of how to measure using the REAL “total population” (not the vendor-defined total population) and note how they apply a “plausibility test” of total MD visits
• Note how they apply a real, all-in third-party trend instead of a non-disease trend
• They will also show why you don’t want to measure incorrectly