From N-of-1 to N-of-all: Clinical Decision Making in the Era of Big Data and Personalized Medicine

Mia Levy, MD, PhD

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BATTLING CANCER, ONE GENOME AT A TIME

Pfizer

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susan g. komen

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If You Can't Measure It, You Can't Improve It

(William Thomson, Lord Kelvin)

AND WARREN HERE IS IN CHARGE OF OUR GUT FEELINGS

Implementation Research: the scientific study of barriers to and methods of promoting the systematic application of research findings into practice

Evolution of Clinical Decision Support

Evidence Driven

Protocol Driven

Pathway Driven

Data Driven?

Riding the Tsunami of Genomic Data

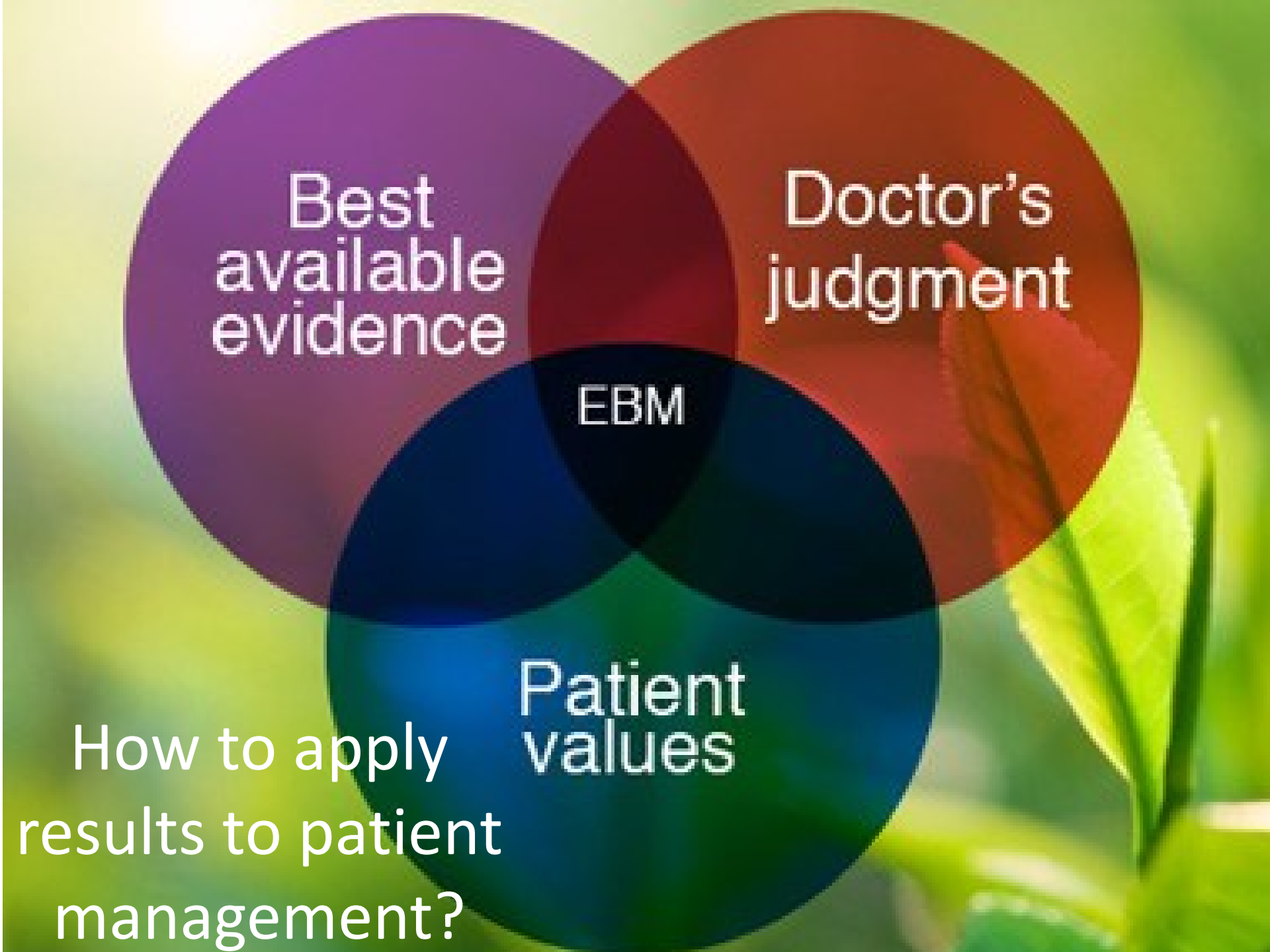
Evolution of testing strategies

Single mutation -> Hot spot panels -> NGS

Decision Support

Which test to order?

How to interpret & report results?



How to apply results to patient management?

TV
BUY
STUDY
WORK
HEALTH
CONFUSION
MIND
JOB
DIRECTION
BILL
FAN
SMS
MONEY

EXPERT SYSTEMS

My Cancer Genome knowledge driven clinical decision support

Clinically Integrated Solutions

Publically Available Resources

Website

>2.5M page views, 213 countries

My Cancer Genome

Vanderbilt EHR info button

>8436 patients

Laboratory Reporting Tool

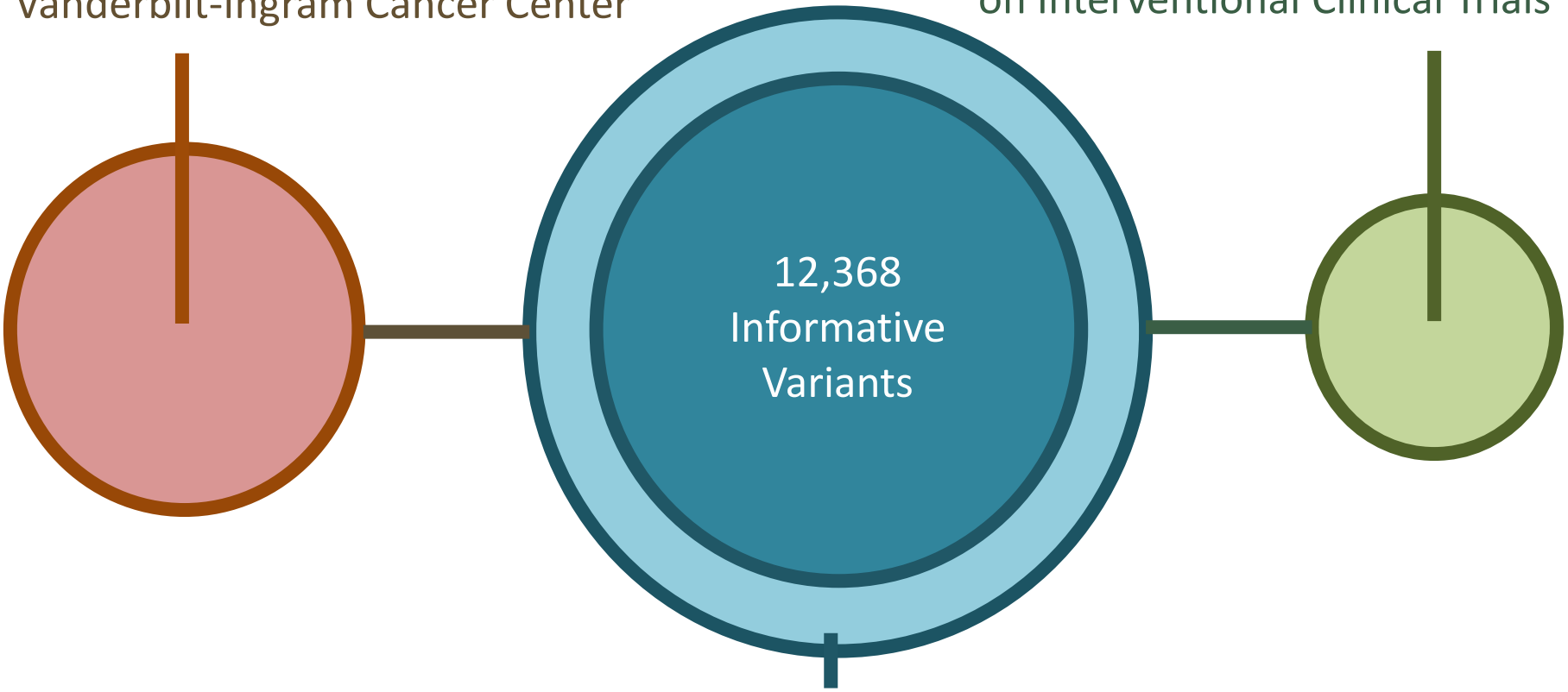
>23000 specimens 25 institutions

Molecular Consult Tool
Clinical Trial Matching

Vanderbilt Experience

8,436 Tumors Genotyped by Vanderbilt-Ingram Cancer Center

979 Total Genotyped Patients Enrolled on Interventional Clinical Trials



21,599 Variants of Uncertain Significance for Discovery Research

4,694 Total Patients Enrolled on Precision Oncology Clinical Trials

Prospective Randomized Trial evaluating impact of CT-matching

Randomized Patient Population

Patient details entered in trial matching tools

Research nurse refines pre-screening results

Final Report generated

Report sent to physician as an EMR message

Data Analysis & Outcomes Reporting

Embedded versus Tethered

Built-in

Brought-in

Balancing EHR documentation innovation with Provider Burnout

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mia.levy@Vanderbilt.edu