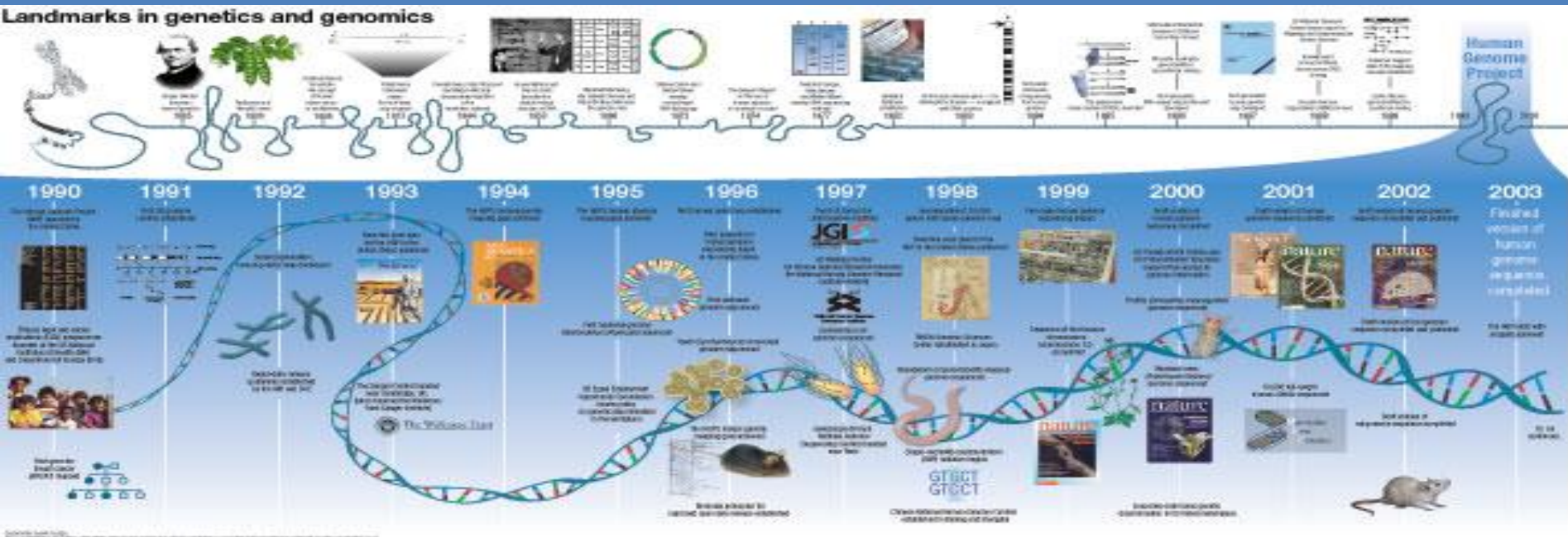


Precision Health: A Bold Initiative at the Arizona Health Sciences Center



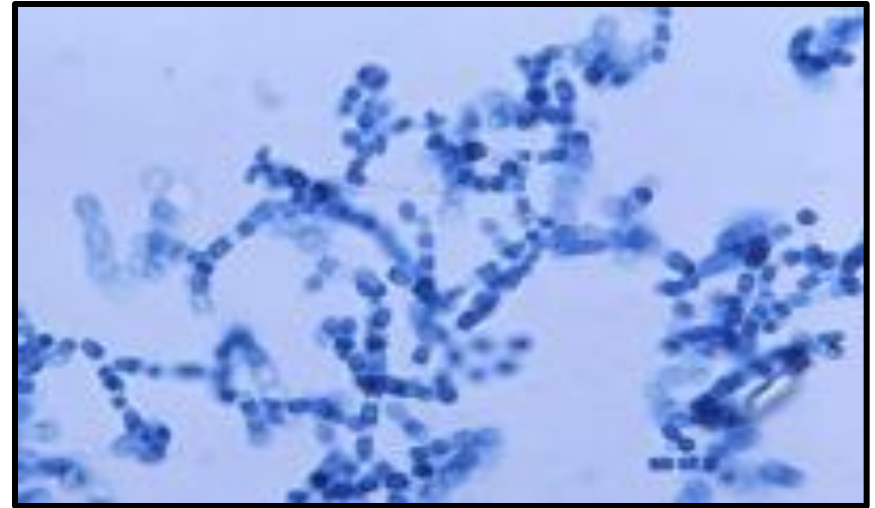
Ken Ramos, MD, PhD

University of Arizona Health Sciences Center

Learning About Valley Fever

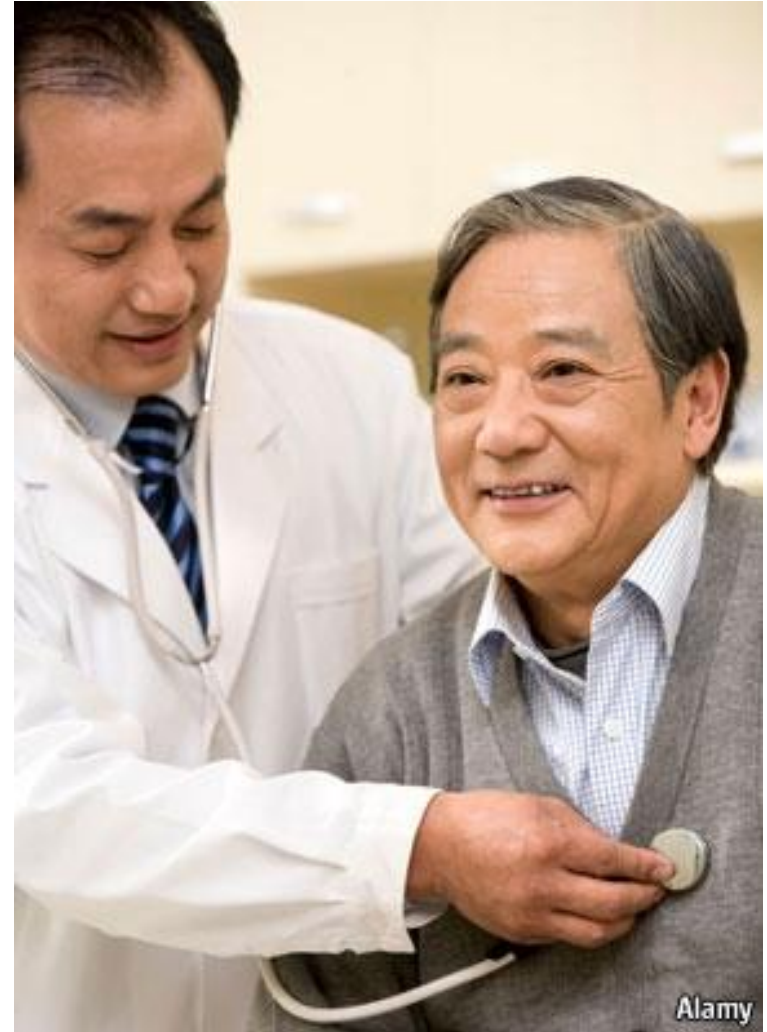
A Precision Health Perspective

- ✓ ADHS and the CDC announced that Valley Fever cases "dramatically increased," in southwestern states, including Arizona.
- ✓ In 1998, Arizona, California, Nevada, New Mexico, and Utah reported 2,265 cases of Valley Fever. In 2011, there were > 22,000.
- ✓ Valley Fever (Coccidioidomycosis) is caused by inhalation of a fungus (Coccidioides) that lives in the soil in the southwestern United States.
- ✓ 90 - 95% of cases are asymptomatic or self-limited with flu-like symptoms that last from weeks to months.
- ✓ **Disseminated disease is associated with suppressed cellular immunity and ancestry (African-American, Filipinos, Hispanics) and a male to female ratio of 5:1.**



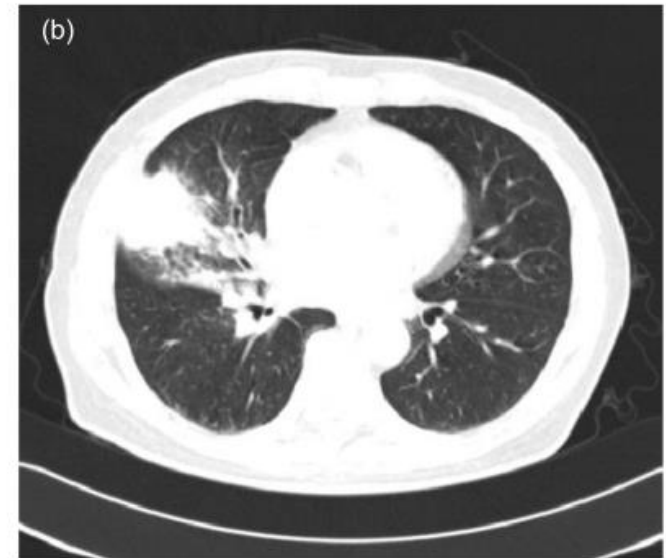
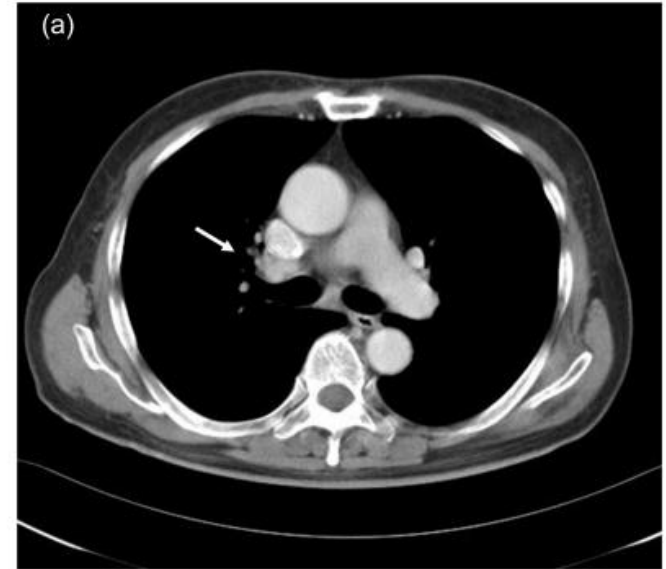
Clinical Scenario

71 y/o Asian male admitted to a hospital in West China with chronic cough and malaise for 2 months. Patient had spent 4 months in Tucson, AZ visiting his son until 2 weeks before the symptoms started. He enjoyed yard work and outdoor activities. The patient presented with transient low grade fever and denied hemoptysis, night sweats, skin rashes or headaches. His past medical history included hypertension and coronary heart disease. He did not smoke or abuse drugs. Physical examination revealed no abnormalities and laboratory tests showed increased ESR of 46 mm/hr, with normal CBC, eosinophil counts, serum chemistries and tumor biomarkers. HIV antibody was negative and sputum cultures showed normal floral growth.



Clinical Scenario - 2

CT scan revealed an irregular margin opacity measuring 3.0 x 3.8 cm in diameter located in the subpleural region of the right middle lobe. Right hilar and mediastinal lymphadenopathy was noted. Lung cancer was considered the most likely diagnosis. Subsequent bronchoscopy and brush cytology was negative. The patient received a right middle and lower lobe lobectomy on the 8th day after hospitalization and recovered without complications. Pulmonary coccidioidomycosis was confirmed by histopathological examination after lobectomy.



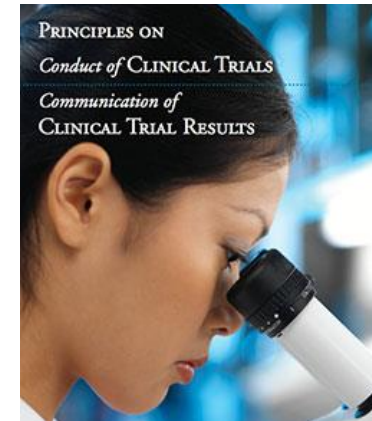
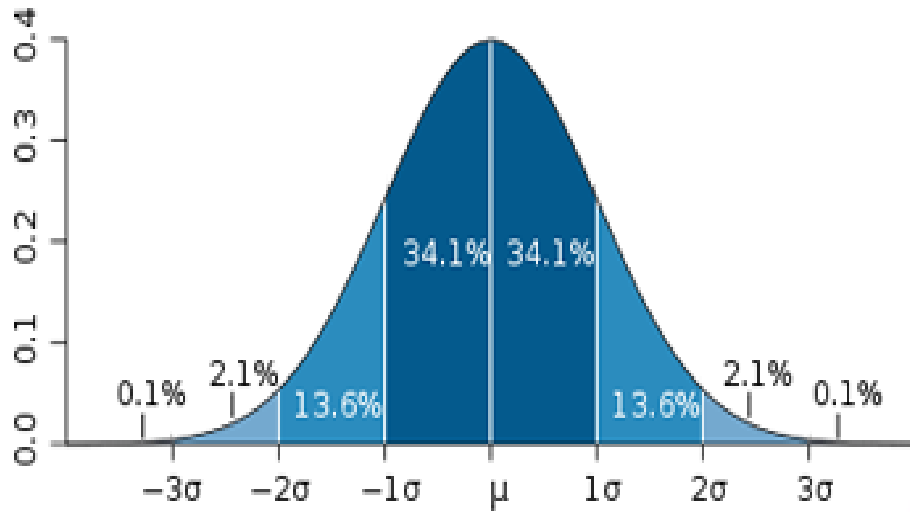
What is Precision Health?

Precision Health is a vision of comprehensive health care delivery that emphasizes the need to integrate the **individual characteristics and needs** of the patient into clinical management.

A core element of precision health is the integration of **genomics, proteomics, metabolomics and bioinformatics** into the delivery of care leading to better definition of disease processes, optimized patient stratification and superior clinical outcomes.



Transformation of Healthcare Delivery in Arizona



Accuracy & Precision

Accuracy is the proximity of the measurement or outcome to the true value.

Precision is the reproducibility of the measurement or clinical outcome



Accurate but, not precise

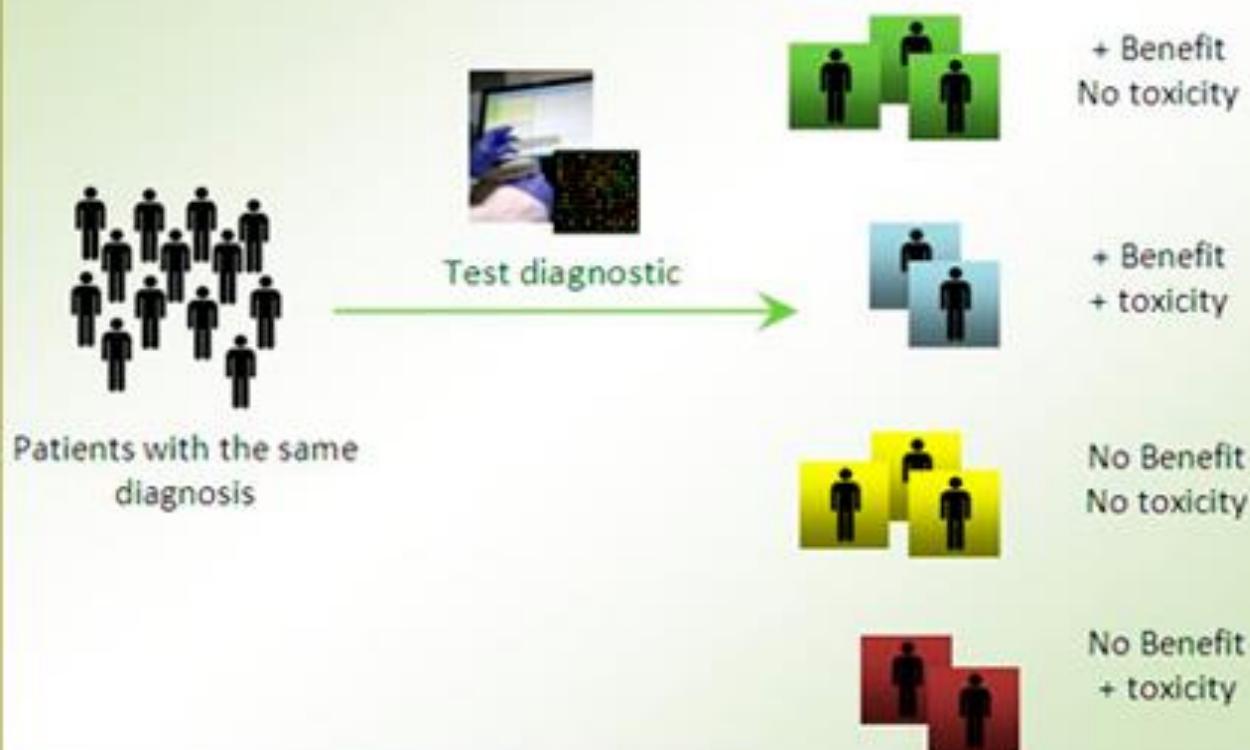


Precise but, not accurate



Accurate and Precise

Improved Diagnostics / Optimized Therapies



Personalized medicine is the ability to offer:

- The right drug
- To the right disease
- At the right time
- With the right dosage

Precision Health for Diagnosis and Management of Valley Fever

Diagnosis



Improvements in technology enable accurate diagnosis at affordable costs

Treatment



Genome-based treatments provide targeted options and more cost effective care

Management



Preventive care for new ACA enrollees

- **Pharmacogenomics: Optimized Treatments**
Decreased Toxicities
- **Personalized management**
- **Molecular diagnostics**

Concluding Remarks

Precision Healthcare

