Agenda

◆ Indian Health Service
  • Context, history, and population health model
◆ Improving Patient Care PCMH Program
◆ HIT to facilitate PCMH and Pop Health
  • RPMS and RPMS iCare
  • Population Health Informatics in service
  • PCMH Application
◆ Discussion/Questions
Remembering the past … continental geo-cultural history of the AI/AN & US Agencies: from Dept of War, to BIA, to IHS, to Tribal Self-Governance
“The federal government spends less per capita on Native American health care than on any other group for which it has this responsibility, including Medicaid recipients, prisoners, veterans, and military personnel. Annually, IHS spends 60 percent less on its beneficiaries than the average per person health care expenditure nationwide.”

Source: A Quiet Crisis: Federal Funding and Unmet Needs in Indian Country

U.S. Commission on Civil Rights, 2003
IHS User Population By Area

TOTAL IHS USER POPULATION FOR FY 2006: 1,448,249
Average population growth rate since 2000 is 1.8% per year
71% high school graduates (80% U.S.) & 10% college graduates (24% U.S.)
29% of AI/ANs fall below poverty standard
Unemployment is 4.0 times the US rate for males and females
Less than 22% with self reported access to the Internet
The Indian Self-Determination Act of 1975 includes an opportunity for Tribes to assume the responsibility of providing health care for their members, without lessening any Federal treaty obligation.

Population HIT requires attention to complex issues of jurisdiction in any study, change, or flow.
Mortality Rates in American Indians & Alaska Natives

- Heart Disease
- Cancer
- Accidents
- Diabetes
- Stroke

AI/AN Mortality vs US All Races

Trends in Indian Health, 1997; Age adjusted rate per 100,000
IHS Challenges

- Community Normalization/ Expectations
- Access to Care
- Socioeconomic status
- Literacy and Access to Information
- Geography
- Transportation
- Alcohol/Substance Abuse
- Violence
IHS Service Model: Community as the Patient

**Broader Picture of Health:**

- Personal Health
- Family Health
- Public Health
- Population Health
- Self-governance
- Transparency of Data

Patient and community sharing of information - demographics, environment, population data, and health conditions
Prevalence of Diagnosed Diabetes
AI/ANs compared to U.S. population

Age-adjusted to the 2000 US standard population with the exception of 1981–1993 data for AIAN, which was age-adjusted to the 1980 US standard population.
Figure. Incidence of Diabetes-Related Lower Extremity Amputation, End-Stage Renal Disease, and Hyperglycemic Death in the US Population, 1990-2005, From the US National Diabetes Surveillance System."
## AI/AN Relative Mortality Rates


<table>
<thead>
<tr>
<th>Condition</th>
<th>Ratio</th>
<th>Description</th>
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<tbody>
<tr>
<td>Alzheimer's Disease</td>
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<td>HIV Infection</td>
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<td>Major Cardiovascular Dis.</td>
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<td>Malignant Neoplasms</td>
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<tr>
<td>Pneumonia &amp; Influenza</td>
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<td>Suicide</td>
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<td>Homicide</td>
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<tr>
<td>Unintentional Injuries</td>
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<td>Diabetes Mellitus</td>
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<tr>
<td>Chronic Liver Dis. &amp; Cirrhosis</td>
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<tr>
<td>Tuberculosis, All Forms</td>
<td>8.5</td>
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</table>

Behavior matters!

Trends in Indian Health, 2003
Community as the Patient

Trends in All-Cause Mortality in US for two different time intervals

Ezzati et al. PLOS Medicine 2008
Salient Points

- Importance of denominators & prevention for health impact
- Denominators involve systems thinking, behavior change, addressing socio-cultural context and equity
- HIT for system change – the IHS experience of what is needed for system change
- Population health informatics a key driver
Lack of population informatics capacity as an organizational “deficiency” disease

Signs and symptoms

- Data graveyards, data “black holes”
- Lots of data, little or unrelated (health system) action
- No strategic direction to leverage lots of data
- Big pipes, trickles of water
- Large amount of resource investments, little impact

Has systemic effects:

- Poor quality data fed up the chain and wreak havoc on resource allocation and decision making
- Impaired organizational sense-making
- Communities prevented from leveraging natural resource: data for decision making
IHS Population Health Informatics

- Quality Improvement
- Epidemiology and Surveillance
- MU of Health IT
- Clinical and Performance Reporting
- Care Management
- Health Care Effectiveness & Research
Agenda

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◆ Discussion/Questions
IHS Priorities

- To renew and strengthen our partnership with Tribes
- To bring reform to the IHS
- To improve the quality of and access to care,
- Ensure that our work is transparent, accountable, fair, and inclusive
The aim of the Improving Patient Care program is to change and improve the Indian Health system. IPC will develop high performing and innovative health care teams to improve the quality of and access to care.

Acknowledgement – IHS National IPC Program Team led by Dr. Lyle Ignace, Director
“Break Through Series” Model:

Major activities of all IPC sites:

- Teams will receive extensive training and support in attaining the skills and knowledge in applying methods for improvement.
- Five group learning sessions-
  - Two face-to-face
  - Two virtual web-ex based learning sessions
  - Knowledge gathering session
- Action orientated initiative that provides the foundation for continued improvement.
Improving Patient Care Program

IPC National Team

IST Teams

Learning Network

IPC Collaborative

Foundation Series

Evaluation
The Plan-Do-Study-Act (PDSA) cycle is a process for testing a change:

(Plan) – develop a plan to test the change,
(Do) – carry out the test,
(Study) – observe and learn from the consequences,
(Act) – determine what modifications should be made to the test.

Indian Health Medical Home: based on Chronic Care Model

The Chronic Care Model

Community
- Resources and Policies
- Self-Management Support

Health Systems
- Organization of Health Care
  - Delivery System Design
  - Decision Support
  - Clinical Information Systems

Improved Outcomes

(Wagner 2003)
Assure Quality of Care

- **Health Care Organization:** Create a culture, organization and mechanisms that promote safe, high quality care among all I/T/U health programs.

- **Community Resources and Policies:** Mobilize community resources to meet needs of patients among all I/T/U health programs.

- **Self Management Support:** Empower and prepare patients to manage their health and health care.

- **Delivery System Design:** Assure the delivery of care is effective, efficient for all care teams.

- **Decision Support:** Promote clinical care that is consistent with scientific evidence and patient preferences.

- **Clinical Information Systems:** Organize patient and population data to facilitate efficient and effective care.
### IPC Levels of Measurement

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<thead>
<tr>
<th>Measurement Domain</th>
<th>Measure Indicators</th>
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<td><strong>Adult GPRA Measures:</strong></td>
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<td>Immunizations*</td>
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<td>Health Risk Assessments*</td>
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<td>Control of A1c</td>
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<td>Tobacco Cessation Treatment*</td>
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<td><strong>Access to Care</strong></td>
<td><strong>Continuity of Care</strong></td>
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<td>ER/UCC visits</td>
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<td>3rd to Next Available</td>
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<tr>
<td><strong>Patient Experience of Care</strong></td>
<td><strong>Customer/Provider/Staff satisfaction survey</strong></td>
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<td>Single question: “They give me exactly the help I want (and need) exactly when I want (and need) it.”</td>
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<td>Measurement Domain</td>
<td>Areas of Focus/Coverage</td>
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<td>Clinical Prevention</td>
<td>Keeping current on preventive screenings</td>
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<td></td>
<td>Keeping current on cancer screening</td>
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<tr>
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<td>Control of Lipids</td>
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<td>Control of Diabetes</td>
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<td>Building Relationships for Care</td>
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</table>
IPC “Microsystem” A

Colorectal Cancer Screening

IPC II – Team A
IPC “Microsystem” B

Colorectal Cancer Screening

IPC II – Team B

[Graph showing trends in colorectal cancer screening over years from 2007 to 2009.]
PDSA Cycle for Microsystems: Data is the Fuel!

**Model for Improvement**

- What are we trying to accomplish?
- How will we know that a change is an improvement?
- What change can we make that will result in improvement?

**Data**

- Hunches
- Theories
- Ideas

- Very Small Scale Test
- Follow-up Tests
- Wide-Scale Tests of Change

**Changes That Result in Improvement**

- Implementation of Change
- Sustaining the gains
- Spreading

**Sequential building of knowledge under a wide range of conditions**
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◆ Discussion/Questions
Resource and Patient Management System

[Diagram showing a flowchart with hardware, software, and database components]
IHS Health Information Solution since 1984
RPMS is an integrated Public Health information system
- iCare – Named 2011 “Laureate” by The Computerworld Honors Program
- EHR – Certified in April of 2011 for both inpatient and outpatient
- Award Winning - Davies Award/ Best of Government IT award
- Composed of over 60 component applications
- Facilitates patient, provider, community and population health perspectives
- Patient and Population based clinical applications
- Patient and Population based practice management applications
- Financially-oriented administrative applications
Typical RPMS Legacy Interface

Press 'RETURN' to continue.
Electronic Health Record
Patient Centric GUI
RPMS: Patient Care Component

Appointment System
Patient Registration
Inpatient Information
Referrals
Billing – A/R
Health Summaries
Clin Reporting System
Quality of Care
Best Practices
User-Defined Queries
PCC Data Entry

Pharmacy
Laboratory
Dental
Radiology

Point of Care EHR
Elder Care
Immunization
Women’s Health
Wellness
Prenatal Care
Behavioral Health
Diabetes Care
Dietary Care
Reminders
Patient Education

Emergency Room
Public Health Nursing
Community Health Rep
Case Management

Patient Care Component (PCC) Database
IHS Population Health Informatics

- Quality Improvement
- Epidemiology And Surveillance
- MU of Health IT
- Clinical and Performance Reporting
- Care Management
- Health Care Effectiveness & Research
IHS Population Health Applications

Resource and Patient Management System/EHR

- iCare – PCMH, Pop Health
- Clinical Reporting System
- CANES, H1N1 Surveillance
- CMET – Event Triggers
- Immunization Module
- NDW + Clinical Repositories
Panel creation and population-based alerts and reasoning
iCare Population Management

- Provides an intuitive, integrated view into diverse patient data elements for populations as well as individuals
- Facilitates the proactive identification and management of populations
- Supports easy creation and customization of panels of patients
- Nationally deployed in May 2007
- Iterative, phased development
- Active workgroup, change control board and Subject Matter Expert involvement
How iCare Fits in the RPMS World
iCare and PCMH 2011

PCMH 1: Enhance Access and Continuity
- Provides method to designate PCP
- Create care teams
- Monitor appointment wait times and office visit times

PCMH 2: Identify and Manage Patient Populations
- Create defined panel lists
- Create and distribute reminders
- Use of disease/condition-specific registries
- Use of diagnostic tags
- Provides demographic information
- Facilitates Community Health Rep outreach

PCMH 3: Plan and Manage Care
- Access to RPMS data from various system components
- Plan care through use of reminders
- Provides risk factor assessment
- Facilitation of care management
- Monitor continuity of PCP and team care
- Includes robust behavioral health care components
- Care plan functionality under development

PCMH 4: Provide Self-Care Support and Community Resources
- Provide summary care pages and reports
- Referral to IHS online resources
- Facilitates Community Health Rep outreach

PCMH 5: Track and Coordinate Care
- Create care teams
- Create defined panel lists
- Create and distribute reminders
- Monitor continuity of PCP and team care

PCMH 6: Measure and Improve Performance
- National Measures, GPRA, MU, IPC
- Provider/team/facility-level measurements
- Monitor ER and UC usage
- Monitor local patient satisfaction
Integrated Framework for Performance Measurement

Equitable Access

Patient & Family Engagement

Care Coordination

Evaluation & Initial Management

Follow-up Care

Population at Risk

Population Health

Overuse

Palliative Care

End of Episode ~ Risk-Adjusted Health Outcomes and Total Cost of Care

Clinical Episode Begins

Time

Safety

© National Priorities Partnership
The IHS posts measures of quality on its “Quality of Care” website for federally operated facilities.

Quality measurement by health condition, facility, and overall IHS standings encourage accountability and promote patient participation.

Current reporting streams include:

- ACOs 65 measures, 14 measures for value-based purchasing, MU 44 EP measures + 15 hospital measures, 38 GPRA measures, UDS reporting measures, and IPC 3.0 and 4.0 quality measures
What Does IHS Measure?

- Improving Patient Care
- Meaningful Use Measures
- National Programs:
  - Diabetes
  - Dental
  - Immunizations
  - Cancer Screening
  - Behavioral Health
  - Cardiovascular Disease
  - Prenatal HIV Screening
- Composite measures, including
  - Diabetes care
  - CVD care
  - Cancer screening
  - HIV quality of care
iCare – National Measures

Complex logic is executed routinely to identify status of adherence to the measure.
Drill down to patient specific data to see their immediate needs.
iCare and PCMH 2011

PCMH 1: Enhance Access and Continuity
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PCMH 6: Measure and Improve Performance
- National Measures, GPRA, MU, IPC
- Provider/team/facility-level measurements
- Monitor ER and UC usage
- Monitor local patient satisfaction
Designate a panel as an “IPC” panel.

Enhanced Panel Definitions to accommodate teams and microsystems.

Additional filters will include “Labs” and “Medications”.
Pull "IPC" panel data. Measures divided into Core measures.
<table>
<thead>
<tr>
<th>Category</th>
<th>Title</th>
<th>Numerator</th>
<th>Denominator</th>
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<th>Total Patients</th>
<th>Total Deceased</th>
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## IPC/Provider Aggregated

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## IPC/Facility Aggregated

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Patient-Centered Medical Home

◆ Joint Principles 2007

◆ Key HIT Drivers and Functions 2010*:
  - Clinical Decision Support
  - Registries
  - Team Care
  - Care Transitions
  - Personal Health Records
  - Telehealth
  - Measurement and Performance Reporting

The IHS Experience: HIT and PCMH

- Long-standing drivers in the care model for over 40 years that are now affecting general health system
- Community as patient means population health IT is integral to daily clinical work
- Close collaboration between clinical and national programs for HIT development
- PDSA for HIT: Iterative cycle of development, with modeling and coding choices entering multiple phases of clinical quality measure development
- Evaluation should be a constant feature of all program and HIT deployments
Acknowledgements

- National RPMS Program Team
- National iCare and Population Health Team
- National IPC Program Team
- DHHS collaborators and VA CPRS developers
- IHS innovators through the years
Questions ?
Extra Slides
Test
- Performed routinely - both nightly and weekly
- Allows for quick panel creation and data display
- Provides Clinical Decision Support
  - Community Alerts
  - Flags
  - Reminders
  - Performance Measures
  - Best Practice Prompts
  - Care Management Event Tracking
  - Meaningful Use
Splash Screen at first login of the day
Anonymous
Related to Community of Residence
Ready Access from many views: Opening View; Panel View; Patient Record
User-defined display
iCare CANES – Community Alerts for National Epidemiologic Surveillance

- Patient → Provider
- Provider → RPMS EMR
- RPMS EMR → iCare – case surveillance and community alerts
- iCare – case surveillance and community alerts → IHS Epi Div
- IHS Epi Div → IHS partners (Tribal, state, federal)

- Data mining using tags/flags
- CANES nightly data extract
- Analysis & report creation
EHRs and Public Health Challenges: Sentinel vs. Large-Scale Surveillance

- Status quo: Manual sentinel providers; long-standing relationships
- EHRs: “Large-scale surveillance” – high fractions of total healthcare transactions available
- Issues: indicators vs. raw data, (cross)-validation, signal-to-noise; analytics capacity; semantic heterogeneity; causal chains; visualization;
- level of aggregation = state and local vs. federal needs

Source: CDC Influenza Division