Leveraging Clinical Databases for Epidemiologic (Population) Research

The Pan Asian Cohort Study (PACS) at the Palo Alto Medical Foundation (PAMF)
Palo Alto Medical Foundation (PAMF)

- San Francisco Bay Area
  - 3 counties:
    - 11 clinics and centers
- 240,000+ active patients
Pan Asian Cohort Study (PACS)

- Lack of information for Type 2 diabetes and obesity for Asian American subgroups:
  - Screening
  - Incidence
  - Prevalence
  - Risk factors
  - Care
  - BMI cut point
Disparities in Diabetes Risk

<table>
<thead>
<tr>
<th></th>
<th>Asian Indian</th>
<th>Chinese</th>
<th>Filipino</th>
<th>Japanese</th>
<th>Korean</th>
<th>Vietnamese</th>
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</thead>
<tbody>
<tr>
<td><strong>Screening</strong></td>
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<td><strong>Risk</strong></td>
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<tr>
<td><strong>Care</strong></td>
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</tbody>
</table>

*after adjusting for age, sex, and BMI.

Data from BRFSS. McNeely, M. J. and E. J. Boyko (2004).
(1) PAMF catchment area represents all six major Asian subgroups.
Distribution of Asian American ethnicities similar between PAMF/PAD catchment and U.S.

Breakdown of Asian American population

United States

- Asian Indians: 4%
- Chinese: 14%
- Filipino: 7%
- Japanese: 4%
- Korean: 24%
- Vietnamese: 12%
- Other Asians: 35%

PAMF/PAD catchment area

- Asian Indians: 9%
- Chinese: 16%
- Filipino: 10%
- Japanese: 10%
- Korean: 10%
- Vietnamese: 18%
- Other Asians: 27%

Summary File 1, 2; PCT5. U.S. Census Bureau, 2006 American Community Survey.
Preliminary findings:
Disparities seen with disaggregation

- Sometimes differences in Asian Americans as an aggregate are driven by specific Asian subgroups.
- Sometimes differences in Asians are masked when aggregated.
- Consistency in differences in Asian American subgroups are noticed when disaggregated.
Preliminary findings: diabetes (men)

Age-and-BMI-adjusted prevalence of diabetes for men
(with 95% Confidence Interval)

+ = statistically significant from NHW at p < .0001
* = statistically significant from Asian (all) at p < .0001
Age-and-BMI-adjusted prevalence of diabetes for women
(with 95% Confidence Interval)

+ = statistically significant from NHW at p < .0001
* = statistically significant from Asian (all) at p < .0001
Preliminary findings: Low HDL (men)

Age-and-BMI-adjusted prevalence of low HDL for men
(with 95% Confidence Interval)

+ = statistically significant from NHW at p < .0001
* = statistically significant from Asian (all) at p < .0001
Preliminary findings: Low HDL (women)

Age-and-BMI-adjusted prevalence of low HDL for women
(with 95% Confidence Interval)

+ = statistically significant from NHW at p < .0001
* = statistically significant from Asian (all) at p < .0001
Preliminary findings: Hypertension

Age-and-BMI-adjusted prevalence of hypertension
(with 95% Confidence Interval)

+ = statistically significant from NHW at p < .0001
= statistically significant from Asian (all) at p < .0001
Preliminary findings: High triglycerides

Age-and-BMI-adjusted prevalence of high triglycerides
(with 95% Confidence Interval)

+ = statistically significant from NHW at p < .0001
= statistically significant from Asian (all) at p < .0001
Preliminary findings:
Metabolic syndrome (men)
Preliminary findings:
Metabolic syndrome (women)

15% increased risk
The Y-Y Paradox: Limitations of BMI as Measure of Adiposity Across Populations

Identical BMIs: 22.3, 22.3

Body fat: 9.1%, 21.2%

Big difference in body fat

Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies

BMI > 23 kg/m² overweight
BMI > 25 kg/m² obese

A WHO expert consultation addressed the debate about interpretation of recommended body-mass index (BMI) cut-off points for determining overweight and obesity in Asian populations, and considered whether population-specific cut-off points for BMI are necessary. They reviewed scientific evidence that suggests that Asian populations have different associations between BMI, percentage of body fat, and health risks than do European populations. The consultation concluded that the proportion of Asian people with a high risk of type 2 diabetes and cardiovascular disease is substantial at BMIs lower than the existing WHO cut-off point for overweight (≥25 kg/m²). However, available data do not necessarily indicate a clear BMI cut-off point for all Asians for overweight or obesity. The cut-off point for observed risk varies from 22 kg/m² to 25 kg/m² in different Asian populations; for high risk it varies from 26 kg/m² to 31 kg/m². No attempt was made, therefore, to redefine cut-off points for each population separately. The consultation also agreed that the WHO BMI cut-off points should be retained as international classifications. The consultation identified further potential public health action points (23.0, 27.5, 32.5, and 37.5 kg/m²) along the continuum of BMI, and proposed methods by which countries could make decisions about the definitions of increased risk for their population.
Using Electronic Health Records to Create an Epidemiologic Cohort
Harnessing PAMF’s clinical database

For a research cohort:

(1) Identify Asian racial/ethnic subgroups
(1) Check for sufficient population

(2) Construct an electronic, record-linked cohort
   (Asian and NHW who are 35+)
(1) Identifying Asian racial/ethnic subgroups: By self-report

Patient Name: ____________________________
Date of Birth: ____________________________
(Please print)

Patient Demographics Questionnaire

We are asking for your race and ethnicity because some people have higher risks of developing certain diseases, such as high blood pressure, diabetes, and heart disease. It is also important that we know your preferred spoken language so that you and your health care team can communicate clearly.

We will keep this information confidential (private) and will update it in your medical record. This information will assist us in continuing to provide you with the best health care.

Please fill in the information below. We greatly appreciate your participation. Thank you.

1. Race. Please mark what best describes you. (Mark up to TWO races.)

- White/Caucasian
- Black/African American
- American Indian or Alaska Native
- Asian Indian
- Chinese
- Filipino
- Guamanian or Chamorro
- Hawaiian
- Japanese
- Samoan
- Korean
- Other Pacific Islander
- Vietnamese
- Other Asian

☐ Other race: Please specify and print clearly: ____________________________
☐ I prefer not to answer

2. Are you of Hispanic Origin? (Please mark the ONE statement that best describes you.)

- Yes:
  - Cuban
  - Puerto Rican
  - Mexican, Mexican American, Chicano
  - Other Spanish/Latino. Please specify: ____________________________
- No, not Hispanic/Latino
  - I prefer not to answer

3. What is your primary ancestry or ethnic origin? (Write up to TWO ancestries.)

________________________________________________________________________

(For example: Italian, Jamaican, Mexican American, Cambodian, Cape Verdean, Norwegian, Dominican, French Canadian, Haitian, Korean, Lebanese, Polish, Mexican, Taiwanese, Ukrainian, etc.)
☐ I prefer not to answer

4. Please indicate your preferred spoken language. [We are required by law (CA Health and Safety Code AS880, Section 125147) to request this information.]

________________________________________________________________________

☐ I prefer not to answer

5. Interpreter Services: Would language interpreter services be helpful to you during your medical visit?

- Yes
- No
Collecting Patient Race/Ethnicity and Primary Language Data in Ambulatory Care Settings: A Case Study in Methodology

Latha P. Palaniappan, Eric C. Wong, Jessica J. Shin, Maria R. Moreno, and Regina Otero-Sabogal

Objective. To collect patient race/ethnicity and language (r/e/l) in an ambulatory care setting.

Data Sources/Study Setting. The Palo Alto Medical Foundation (PAMF), December 2006–May 2008.

Study Design. Three pilot studies: (1) Comparing mail versus telephone versus clinic visit questionnaire distribution (2) comparing the front desk method (FDM) versus exam room method (ERM) in the clinic visit; and (3) determining resource allocation necessary for data entry.

Data Collection/Extraction Methods. Studies were planned and executed by PAMF’s Quality and Planning division.

Principal Findings. Collecting r/e/l data during clinic visits elicited the highest response rate. The FDM yielded higher response rate than the ERM. One full-time equivalent is initially necessary for data entry.

Conclusions. Conducting sequential studies can help guide r/e/l collection in a short time frame.
### Numbers of Asian Patients at PAMF: surname analysis and self-report

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Current, self-report</th>
<th>Projected, self-report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian Indian</td>
<td>23,555</td>
<td>70,937</td>
</tr>
<tr>
<td>Chinese</td>
<td>20,310</td>
<td>63,583</td>
</tr>
<tr>
<td>Filipino</td>
<td>5,991</td>
<td>20,601</td>
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<tr>
<td>Japanese</td>
<td>2,567</td>
<td>7,972</td>
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<tr>
<td>Korean</td>
<td>2,005</td>
<td>5,852</td>
</tr>
<tr>
<td>Vietnamese</td>
<td>2,241</td>
<td>6,907</td>
</tr>
</tbody>
</table>
Harnessing PAMF’s clinical database

For a research cohort:

(1) Identify Asian racial/ethnic subgroups
   (1) Check for sufficient population

(2) Construct an electronic, record-linked cohort
   (Asian and NHW who are 35+)
Constructing a dynamic, record-linked cohort

Reconstructed Longitudinal Cohort for Incidence and Predictors

EHR initiation

Additional Lab Data Available

Funding period

Future Follow Up

Longitudinal Cohort followed forward for incidence and predictors
Questions in using a clinical cohort
Completeness and reliability of clinical data

1) Reliability in diagnosing diabetes
2) Differential screening rates
3) Large sample size
4) Reliability of Laboratory Data
(1) EHR is superior in accuracy to administrative claims data.

Sensitivity in measuring diabetes:

- Electronic Health Record: 97.6%
- Administrative Claims Data: 75.0%

Misses 25% of diabetic patients

Gold standard: manual chart review

Completeness and reliability of clinical data

1) Reliability in diagnosing diabetes
2) Differential screening rates
3) Large sample size
4) Reliability of Laboratory Data
(2) Screening rates high compared to cohort study response rates.
Completeness and reliability of clinical data

1) Reliability in diagnosing diabetes

2) Differential screening rates

3) Large sample size

4) Reliability of Laboratory Data
(3) Large Asian Population

MESA Coordinating Center. MESA Table 3. Seattle: University of Washington.
Completeness and reliability of clinical data

1) Reliability in diagnosing diabetes

2) Differential screening rates

3) Large sample size

4) Reliability of Laboratory Data
Proportion of patients with LDL Control
(LDL ≤ 100 mg/dL)

*Statistically significant at $p = 0.018$ using multivariate analysis.
Posterior Means: LDL

November 2006
Plot of the mean HDL by day from Mar 2000 to Mar 2009. Change point analysis highlighted the date 11/06/2006 as a candidate for change (shown in red). This is consistent with information from the lab that an analyzer change occurred in Nov 2006.
PRANA Resources

PRANA stands for life force in Sanskrit.

The Palo Alto Medical Foundation's (PAMF) South Asian Wellness Task Force, a committee of physicians, dietitians and community members, created PRANA (Prevention and Awareness for South Asians) to provide health education and resources to the South Asian community.

If you would like to know more about the PRANA program please call us at 650-330-4523.

Audio / Visual Presentations (in English)
- Why South Asians Are At Risk
- Prediabetes
- Diabetes
- Lowering LDL Levels
- Lowering Triglycerides
- Raising HDL Levels
- Understanding Cholesterol
- Nutrition: Soy Protein
- Nutrition: Grains

Audio / Visual Presentations (in Hindi)
- Why South Asians Are At Risk
- Lowering LDL Levels
- Lowering Triglycerides
- Raising HDL Levels
- Understanding Cholesterol

Health Tools
- South Asian BMI Calculator
- Calculate your target heart rate
- Calculate cost of smoking
- Calculate your child's healthy weight
- Health Risk Assessment
- More interactive tools

Newsletter
Subscribe to our monthly South Asian Wellness newsletter.

- Add
- Remove
- Send As HTML
- South Asian Wellness

South Asian Health
Risk Factors
- Who's at Risk?
- Determine Your Risk
- Major Risk Factors
- Health Concerns
- Common Misconceptions
- Being Proactive

Health Topics
- Type 2 Diabetes
- Cholesterol
- Nutrition & Children
- Skin Disorders
- more topics...

Healthy Choices

Online Survey
We invite you to add to our Web site by sharing your ideas and experiences.

Your e-mail address: