Fitting a Square Peg in a Round Hole
A Process Improvement Evaluation Approach to Integrating Primary Prevention Service Monitoring within the Military’s Electronic Health Record

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Disclaimer: The views expressed in this presentation are those of the authors and do not reflect the official policy or position of the Department of the Army, DoD, or the U.S. Government.
Goal: To describe a process used to standardize health promotion service charting in an existing, clinically-focused Electronic Health Record (EHR) for the purpose of facilitating collaboration between prevention-focused health promotion staff and treatment-focused clinical staff, with the long-term intention to formally integrate primary prevention in the Military Health System (MHS).

Why is standardized EHR charting important for primary prevention programs?

• Allows primary prevention program staff to effectively communicate and collaborate with other healthcare professionals.
• Empowers more rigorous program evaluation designs by allowing health promotion and chronic disease data to be connected.

Success Story: By standardizing health promotion service charting in an existing clinical EHR, the Army Wellness Centers are positioned to advance the practice and evaluation of MHS clinical and health promotion service integration for the benefit of patients/Soldiers.
**Agenda**

- Army Public Health Center Background
- Army Wellness Center Background
- AWC Coding Guidebook Revision Process
- Lessons Learned
  - Supporting factors
  - Limiting factors
- Questions
Organizational Background

Army Public Health Center
Mission: To enhance Army readiness by identifying and assessing current and emerging health threats; developing and communicating public health solutions; and assuring the quality and effectiveness of the Army’s Public Health Enterprise

Health Promotion and Wellness Directorate
Mission: To advocate for global force fitness through strategically developing, integrating, standardizing, and evaluating health promotion and wellness services for the Army.

- Public Health Assessment Division
- Army Wellness Center Operations Division
- Health Promotion Operations Division
- Health Education and Application Division
Unhealthy behaviors are **highly prevalent** in the Active Duty US Military and undermine the ability to maintain readiness.

<table>
<thead>
<tr>
<th>UNHEALTHY BEHAVIOR</th>
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<tbody>
<tr>
<td>• Insufficient sleep</td>
</tr>
<tr>
<td>• Inadequate physical activity</td>
</tr>
<tr>
<td>• Poor dietary habits</td>
</tr>
<tr>
<td>• Tobacco use</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>INTERMEDIATE RISK FACTORS FOR CHRONIC DISEASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Overweight/Obesity</td>
</tr>
<tr>
<td>• Poor cardiorespiratory fitness</td>
</tr>
<tr>
<td>• Elevated blood pressure</td>
</tr>
<tr>
<td>• Elevated blood glucose</td>
</tr>
<tr>
<td>• Abnormal blood lipids</td>
</tr>
<tr>
<td>• Chronic stress</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHRONIC DISEASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Cardiovascular disease</td>
</tr>
<tr>
<td>• Type II Diabetes</td>
</tr>
<tr>
<td>• Chronic respiratory disease</td>
</tr>
<tr>
<td>• Cancer</td>
</tr>
</tbody>
</table>
The AWC is an evidence-informed Workplace Health Promotion Program (WHPP) designed to increase healthy behaviors for primary prevention of chronic, behaviorally-mediated diseases in Army Community Members.

- All services are FREE and available to Soldiers, their Families, Department of the Army Civilians, and retirees.

- AWCs follow the recommendations of the Community Preventive Services Task Force for Assessment of Health Risk with Feedback, and adds Health Coaching (unique to AWCs).

- U.S. Army Public Health Center supports through implementation, staffing, training, program innovation, monitoring, and evaluation.

- Local installation’s clinic command structure provides execution and oversight.
Location of AWCs Worldwide

- Fort Wainwright
- Fort Irwin
- Schofield Barracks
- JB San Antonio
- JB Lewis-McChord
- Fort Carson
- Fort Riley
- Fort Leavenworth
- Fort Knox
- Fort Campbell
- Fort Sill
- Redstone Arsenal
- Fort Huachuca
- Fort Hood
- Fort Polk
- Fort Rucker
- Fort Drum
- West Point
- Carlisle Barracks
- Aberdeen Proving Ground
- Fort Meade
- Fort Eustis
- Fort Lee
- Fort Bragg
- Fort Jackson
- Fort Gordon
- Fort Stewart
- Fort Benning

Map Legend:
- ● Current
- ○ Future

Additional Maps:
- Camp Humphreys
- Camp Zama
- Wiesbaden
- Landstuhl
- Stuttgart
- Vicenza

International Locations:
- Germany
- North Korea
- South Korea
- Japan
- France
- Italy
- Czech Republic
- Poland
- NATO

Army Public Health Center

UNCLASSIFIED
Constructs that Drive Program Standards

Equipment

Programs

Staffing

Facilities
The Performance Triad is an Army Medicine led initiative that seeks to improve health behaviors in sleep, activity, and nutrition.
“The majority of clients experienced improvements in their risk factors for chronic disease, often regardless of their health-related goals. Average improvements were generally on par with those reported in the literature on Workplace Health Promotion Programs.”

AWC Prospective Outcomes Evaluation Report, FY2014/2015
## AWC Impact Continued: Improvements in Risk Factors with AWC Follow-Up Visit

<table>
<thead>
<tr>
<th>Intermediate Risk Factor</th>
<th>Avg. Change</th>
<th>Avg. Effect Size (d)</th>
<th>Avg. Change</th>
<th>Effect Size (d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Fat</td>
<td>-1.1%</td>
<td>0.1 to 0.2</td>
<td>-0.87%&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.25</td>
</tr>
<tr>
<td>BMI</td>
<td>-0.15 to -0.47 BMI (~ 1 to 3lbs)</td>
<td>0.1 to 0.2</td>
<td>-0.46 BMI&lt;sup&gt;a&lt;/sup&gt; (~ 3lbs)</td>
<td>0.31</td>
</tr>
<tr>
<td>Cardiorespiratory Fitness (VO₂ max)</td>
<td>+3.5 ml/kg/min (or 1 MET)</td>
<td>0.57</td>
<td>+2.22 ml/kg/min&lt;sup&gt;b&lt;/sup&gt; (or 0.63 MET)</td>
<td>0.39</td>
</tr>
<tr>
<td>Stress (PSS-10)</td>
<td>-2.0 to -5.9 PSS</td>
<td>0.3 to 0.5</td>
<td>-1.81&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.27</td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>-6.9 mmHg total blood pressure</td>
<td>0.10 to 0.23</td>
<td>-6.19 mmHg&lt;sup&gt;a&lt;/sup&gt; total blood pressure</td>
<td>0.35</td>
</tr>
</tbody>
</table>

<sup>a</sup> based on clients with an outcome-related goal and at least 30 days between initial and most recent assessment.  
<sup>b</sup> based on all clients regardless of goal or days between assessments; interpret with caution due to small sample size (n = 110). References for changes in WHPP literature: Matke et al., 2013; Anderson et al., 2009; Conn et al., 2009; Verweij et al., 2011; Richardson & Rothstein, 2008; van der Klink et al., 2001; Baer et al., 2012; Huang, Li, Huang, & Tang, 2015; Hutchinson & Wilson, 2011; Ebrahim & Smith, 1997.
Way Forward in AWC Evaluation

Increase Evaluation Rigor

Utilization of the Army’s EHR

- Accurate and standardized AWC Coding
- Evaluate the impact of AWCs on chronic, behaviorally-mediated disease

- Accurate and standardized referral documentation
- Utilize a comparison or control-group design

- Determine cost savings using a health economics evaluation
AWC Coding Guidebook
Revision Process
Overview of the Process

Initial State
2011 - DEC 2015

Codebook Revisions and Approval
DEC 2015

Feasibility Testing
MAR 2016

Pilot and Evaluation
Train-the-trainer Approach and Code Utilization
JUN-NOV 2016

Enterprise-wide Rollout and Evaluation
JAN-AUG 2017

Continued Monitoring for Coding Compliance
SEPT 2017 onward
Overview of the Process

**Initial State**

- **2011 - DEC 2015**
  - Codebook Revisions and Approval
    - DEC 2015
  - Feasibility Testing
    - MAR 2016
  - **Pilot and Evaluation**
    - Train-the-trainer Approach and Code Utilization
      - JUN-NOV 2016
    - **Enterprise-wide Rollout and Evaluation**
      - JAN-AUG 2017
  - **Continued Monitoring for Coding Compliance**
    - SEPT 2017 onward
• AWCs are integrated within the local installation’s clinic command structure and the patient-centered medical home (PCMH) to lay the groundwork for collaboration efforts.

• Local clinic was responsible for providing electronic health record (EHR) access and rudimentary EHR training.

• Program oversight was responsible for providing the appropriate, Army Medicine approved codes and ensuring standardization.

• AWC Codebook last updated in 2011.

• Preliminary evaluation presented opportunities for improvement.
Overview of the Process

- **Initial State**: 2011 - DEC 2015
- **Codebook Revisions and Approval**: DEC 2015
- **Feasibility Testing**: MAR 2016
- **Pilot and Evaluation**: JUN-NOV 2016
  - Train-the-trainer Approach and Code Utilization
- **Enterprise-wide Rollout and Evaluation**: JAN-AUG 2017
- **Continued Monitoring for Coding Compliance**: SEPT 2017 onward
• Why revise?
  – Difficult to read and follow
  – Provided redundant information
  – Did not include all AWC services
  – Lacked standardized definitions for services

• Determine new codes
  – Borrowed the American Medical Association coding handbooks from the local clinic
  – Compiled all codes that might map onto AWC core programs
  – Discussed options and determined best fit

• Received approval for new codes
  – U.S. Army Medical Department’s Patient Administration Systems and Biostatistics Activity (PASBA) reviewed potential codes
  – Revised codes based on feedback
Overview of the Process

Initial State
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Enterprise-wide Rollout and Evaluation
JAN-AUG 2017

Continued Monitoring for Coding Compliance
SEPT 2017 onward
• Some previous coding guidelines could not be executed due to unknown constraints. Feasibility testing prevented this from happening again.

• Two AWC Program Specialists completed a series of exercises to test the coding guidebook in a real-world setting.

• All codes passed the feasibility testing phase.
Overview of the Process

Initial State

2011 - DEC 2015

Codebook Revisions and Approval

DEC 2015

Feasibility Testing

MAR 2016

Pilot and Evaluation
Train-the-trainer Approach and Code Utilization

JUN-NOV 2016

Enterprise-wide Rollout and Evaluation

JAN-AUG 2017

Continued Monitoring for Coding Compliance

SEPT 2017 onward
Three AWCs participated in the pilot.

Program Specialists from each installation received remote training and additional materials:
- Training to use with their staff
- Revised codebook
- Quick reference guide for coding
- Scenario answer key for training other staff

Program Specialists were given two weeks to train the staff members at their local AWC.

All sites used the codes for 2 months.
Program Specialists who participated in the original remote training and local staff who participated in training provided by their Program Specialist were both asked to complete a brief, open-ended survey. It asked about:

- Utility
- Realism of the practice scenarios
- Length
- Suggestions for revision
- Remaining questions

After responses were received and compiled, AWC Operations met with the Program Specialists to ensure their questions were answered and receive additional verbal feedback.
• After a six-week waiting period, coding data were ready for analysis.

• Data were pulled from the EHR for each participating AWC, and the following codes were examined:
  – Diagnosis codes
  – Evaluation and Management (E&M) codes
  – Healthcare Common Procedure Coding System (HCPCS) codes

• Data were reported by AWC including an overall frequency and percentage of correct codes for each coding type, and a detailed record of non-standardized codes (not encompassed in the Codebook).

• Pilot was successful: codes were typically used correctly and helpful tips were gathered.
Overview of the Process

1. Initial State: 2011 - DEC 2015
2. Codebook Revisions and Approval: DEC 2015
   - Train-the-trainer Approach and Code Utilization
5. Enterprise-wide Rollout and Evaluation: JAN-AUG 2017
Training was adapted based on the lessons learned, then delivered simultaneously to all AWCs worldwide.

Program Specialists had one month to train their staff members for a simultaneous roll-out of revised coding.
• Coding was evaluated for the first two months of use.

• After a six-week lag time between data collection and exportation, coding data were ready to analyze.

• Data were pulled from the EHR for each participating AWC with all coding types examined.

• Data were reported by AWC including the overall frequency and percentage of correct codes for each coding type, and a detailed record of non-standardized all codes (not in the Guidebook).

• Data were discussed with the program manager first, then reported to all Program Specialists in a monthly virtual meeting.

• Overall, AWC Coding Guidebook rollout was successful.
Overview of the Process

- **Initial State**: 2011 - DEC 2015
- **Codebook Revisions and Approval**: DEC 2015
- **Feasibility Testing**: MAR 2016
- **Pilot and Evaluation**: JUN-NOV 2016
  - Train-the-trainer Approach and Code Utilization
- **Enterprise-wide Rollout and Evaluation**: JAN-AUG 2017
- **Continued Monitoring for Coding Compliance**: SEPT 2017 onward
Way Ahead: Monitoring Coding Compliance

• Continued monitoring of codes will maintain standardization and compliance.

• For each type of code, the percentage of correct codes for each AWC will be reported on a bi-annual basis (Q1 & Q3).
  – This report has high visibility at the local, regional, and headquarters level commands.

• Each AWC has identified a Coding Champion, who will be the first to receive bi-annual coding results and can help enact changes at the local level if needed.
Lessons Learned
• AWCs already emphasized standardization in programming and were eager to ensure their coding was standardized as well.

• Program Manager’s drive to take the program to the next level through evaluation efforts.

• Emphasis on why the codes were changing.

• AWCs are staffed with experts in the health promotion / exercise testing field and hold NCCA*-approved credentials.

*National Commission for Certifying Agencies
Supporting Factors: Army Structure

• Support of an Army Medicine oversight organization (PASBA)

• The AWCs are embedded within their local clinic’s command structure

• Chain of command made it easy to elevate local issues and address them quickly

• Cooperation from the Program Specialists and their staff
• Six-week lag time from when data are entered to retrieval from the EHR
  – Makes it impossible to provide real-time feedback.
  – Presents recall difficulties when trying to correct errors

• Authority had neither the time nor the inclination to help choose codes
• Every local installation had their own EHR processes, which had to be carefully navigated at the local level
• It can be challenging to obtain full buy-in in a large, widely-dispersed organization with multiple simultaneous goals
Lessons Learned

• Be your own advocate – propose code options rather than expect options to be presented.

• Ensuring accountability is a must-have.

• Be flexible in repurposing clinical codes for prevention or health promotion efforts.

• Ensure that EHR templates are updated to decrease the likelihood of using old or inappropriate codes.

• Emphasize what can be gained from combining health promotion and clinical data.
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Mr. Richard Hoke
Ms. Danielle Burton

AWCs
Schofield Barracks, Fort Meade, Fort Sill, Fort Irwin, & Fort Leonard Wood

PASBA
Questions?