Wingman-Connect
A Network Health Suicide and Depression Prevention Program for Air Force Trainees

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Overview

- Context of Military Suicides
- Guiding Network Health Model
- Wingman-Connect Program
- Efficacy Trial – Findings
- Phase 2 Effectiveness/Implementation (in planning)
Wingman-Connect

Dept of Defense funding (2014): University/USAF partnership

- Build healthy connections, coping with transitions
- Test as universal prevention to reduce suicide risk in young enlisted
- Current strategies focus on high risk (detection, Tx, means safety)

Network-Health Approach

- Adapt network-informed Sources of Strength (LoMurray, 2005)
- Strengthens positive bonds, natural coping resources (Wyman, 2010)
- Active training model: Peer-to-peer teaching; diffusion of norms

Relationships Disruptions Precipitants for Military Suicides

- Military service poses relationship challenges - separations, relocations-impact family, job readiness, health (IOM 2013)
• Younger, enlisted Service Members population of greatest concern
• USAF Suicide Decedents: 83.4% have ≤ 1 deployments
• Active duty suicide rates comparable to US population after being lower for decades

DoDSER Reports 2013-2020
With deaths by suicide rising, Air Force orders resiliency stand-down

CMSAF Wright resiliency message to airmen

Chief Master Sergeant of the Air Force Kaleth Wright announces a one-day stand down to discuss resiliency and suicide prevention.
Most suicide decedents did not communicate intent
Many outside identifiable high-risk groups
41.7% Failed/Failing Relationship in 2018
Challenge of Ecological Validity

Data-Informed Adaptation (Mar 2015-Dec 2016)

- Sheppard AFB Technical Training School; ~40,000 trainees/yr.
- Input: military training leaders, instructors, MH Wing, airmen-in-training
  - “death by PowerPoint”
  - ‘Check the box training’
- Pilot and refine modules with 10 cohorts, 352 Airmen-in-training

What Increased Airmen Engagement & Retention?

- Trainees’ Personal Motivations
career success, family traditions/needs
- Class Unit Focus
group activities/skills, identity/pride
- Distributed Learning
  6 hrs. total over 3 days
- Technical School (Squadron) Buy-in
  Informal walk-abouts, orientations for instructors
What is Network Health Model in Suicide Prevention?

**Individual Social Bonds**

*Thwarted Belonging and STB*  
(Van Orden & Joiner, 2011)

*Perceived connectedness*  
(Whitlock, Moore, Wyman, 2014)

*Integration in peer network*  
(Wyman et al 2019)
Network-Informed Suicide Prevention

**Group Structure**

*Cohesion protective in Army Units*  
(Mitchell et al., 2012)

*Lateral/horizontal cohesion*  
(Campbell-Sills et al 2020)

*Intergenerational cohesion*  
(Wyman et al 2019)
Network-Informed Suicide Prevention

Descriptive & Regulatory Norms

**Army Units w/ attempts** (Ursano et al. 2017)

**Suicide attempt clustering** (Wyman et al. 2019)

**Help-seeking acceptability** (Pisani et al, 2012)
Network-Informed Suicide Prevention

Descriptive & Regulatory Norms

Group Structure

Individual Social Bonds
Wingman-Connect with Airmen in Technical Training

Manualized Training for Tech Class as Unit
- Organic unit (i.e. instruction, informal norms)
- Struggling & strong AiTs

- **Active Learning**
  - Each participant’s goals-reasons for enlisting
  - High-energy activities
  - Draw out ‘real-world’ strengths

- **Group and Individual Skills**
WINGMAN-CONNECT
FOUR CORES

BALANCE

KINSHIP

GUIDANCE

PURPOSE
## Wingman-Connect Structure and Emphasis

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<thead>
<tr>
<th>Block 1</th>
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**Class Challenge**
Text/Video Messaging – 6m

Reinforce intervention and group norms through personal application (Pisani et al. 2019) and peer testimonials (Pisani et al. 2018)

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THEIR content early on
Text/Video Messaging – 6m

Reinforce intervention and group norms through personal application (Pisani et al 2019) and peer testimonials (Pisani et al 2018)

Gaining “Mind share”
Text/Video Messaging – 6m
Reinforce intervention and group norms through personal application (Pisani et al 2019) and peer testimonials (Pisani et al 2018)
Text/Video Messaging – 6m

Reinforce intervention and group norms through personal application (Pisani et al. 2019) and peer testimonials (Pisani et al. 2018).
Randomized Trial Testing Wing-Conn Impact

Recruitment

Enrollment

Baseline Assessment

Randomization

1732 Airmen from 216 Classes Attend Enrollment Session

1485 enrolled*/1440 Target Enrollment 215/180 Classes (26 Cohorts)

1481 (99.7%) Airmen from 215 Classes Complete Baseline Assessment

Blocked by Squadron; Classes matched by AFSC, duration Randomization by Class [1:1]

365 TRS (Avionics), 363 TRS (Weapons) 55 AFSCs; 1049 classes Oct’17-Jan’19

281 classes ineligible: outside class length criteria (37-91 days)

107 Classes to Wingman Connect 748/720 Airmen; 222/144 Key Wingman 6 hrs + Text Messaging (n=617, 82.5%)

108 Classes to Stress Management 737/720 Airmen 2 hrs + Text Messaging (n=630, 85.5%)

1481 Airmen from 215 Classes

Follow-up Assessment

At Tech School: 1mo follow-up: 694 (94.2%) 0 subjects withdrew

At 1st Duty Station: 6mo follow-up: 618 (83.9%)

Allocation

Recruitment

Enrollment

Baseline Assessment

Randomization

High Retention Exceeded Projections

At 1st Duty Station: 6mo follow-up: 629 (84.1%)

8 Baseline Assessment

Recruitment

Enrollment

Baseline Assessment

Randomization

High Retention Exceeded Projections

At 1st Duty Station: 6mo follow-up: 629 (84.1%)
Wingman-Connect RCT: Measures/Hypotheses

**Aim 1. Primary Outcomes:**

Suicide Severity (*CAT - SS*)

Depression Symptoms (*CAT - DI*)

CAT- Computerized Adaptive Test for Mental Health (Gibbons et al. 2012, 2017)

**Occupational Impairment:** Behavioral indicators (*Herrell et al., 2014*)

**Aim 2. Hypothesized Mediators: Class Protective Factors**

**Cohesion** (*Podsakoff & MacKenzie, 1994*)

**Morale** (*Britt & Dickinson, 2006*)

**Class Healthy Behaviors & Norms** (*Wyman et al., 2019*)

**Respectful Class Connections** – Class member nominations (*Valente, 2009*)

**Analyses:** Multi-level models: Effect of Wing-Conn vs. stress management conditioned on baseline measures (individual Airmen nested in class units). Covariates: gender, race, age, component (active duty vs. reserve, guard)
Wingman-Connect Immediately Reduced Suicide Severity and Depression in Training
Scores shown over 6-month study period, as assessed at Baseline, 1-Month, and 6-Months
Computerized Adaptive Test for Mental Health (CAT-MH; Gibbons et al 2017)

Suicide Severity Score

Depression Scale Score

*Wingman-Connect versus stress management training impact $p < .05$

Wingman-Connect Reduced Elevated Depression
CAT-DI >35 = med-high probability of depression dx

Wing-Conn trained 20% less likely at 1- or 6-mo (OR: 0.80, CI:.64, .97, p=.011)

W-C: 16.1%; SM: 20.9%

NNT: Training 21 AiTs in Wing-Conn will produce 1 less Airman at elevated depression risk vs expected
Wingman-Connect Average Effect on Elevated Risk for SI
CAT-SS >34 = high probability of SI

Wing-Conn trained 19% less likely at 1= or 6-mo (OR: 0.81, CI:.64, 1.07, p=.067)

W-C: 10.3%; SM: 12.6%

NNT. Training 44 AiTs in Wing-Conn will produce 1 less Airman at elevated suicide risk vs expected
Wingman-Connect trained had 49% and 50% decreased odds of reporting Corrective Training or Negative Counseling Statements in past 30 days versus Stress Management Training.

Separated from AF: 7 in SM vs. 4 in Wingman-Connect
Wingman-Connect Impact on Cohesive Healthy Class Reduced Suicide Severity at 1-month (mediator)

Direct path = -0.141**

Note: Individual-level mediation (2-1-1 model).
Suicide Risk at baseline and covariates are controlled in model. Coefficients between training and cohesive thriving class and suicide risk at 1-mo indicate beneficial impact of W-C.

** p < .01  *p < .05
Wingman-Connect Impact on Cohesive Healthy Class Reduced Suicide Severity at 1-month (mediator)

Class Cohesion, Morale, and Healthy Norms

WingConn vs. Control

-0.248**

Indirect path = 0.143 X -0.248 = -0.035*

Suicide Risk at 1 mo.

Note: Individual-level mediation (2-1-1 model).

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Class Cohesion, Morale, and Healthy Norms

WingConn vs. Control

Indirect path = 0.143 x -0.248 = -0.035*

Direct path = -0.141**

Direct Path adjusting for Cohesive Class = -0.116*

Suicide Risk at 1 mo.

Note: Individual-level mediation (2-1-1 model).

Suicide Risk at baseline and covariates are controlled in model. Coefficients between training and cohesive thriving class and suicide risk at 1-mo indicate beneficial impact of W-C.

** p < .01  * p < .05
Wingman-Connect Impact on Cohesive Healthy Class
Reduced Depression Symptoms at 1-month (mediator)

Note: Individual-level mediation (2-1-1 model).
Suicide Risk at baseline and covariates are controlled in model. Coefficients between training and cohesive thriving class and suicide risk at 1-mo indicate beneficial impact of W-C.

** p < .01   *p < .05
First universal program tested w/ RCT to reduce suicidal ideation and depression symptoms in general AF population

Advantage of universal prevention where many will not seek help
  • Benefited Airmen higher and lower risk at baseline

Programs supporting mission and suicide prevention more sustainable
  • 50% reduction in work problems (tech training only)

Worked through expected mechanism-supports network health model
  • Cohesive healthy class reduced SI and depression
  • Engaging units as a group may be essential for ecological validity

Expansion to operational USAF bases likely necessary, to promote protective working units for continuity of impact

USAF approved expansion (horizontal/vertical) for further testing

Limitations
  • No blinding of training condition
  • Self-report (validated against clinical interviews)
  • Trainers were research staff
PROJECT TEAM

Peter A. Wyman, Principal Investigator
Anthony R. Pisani, Co-Investigator
C. Hendricks Brown, Co-Investigator
Eric Caine, Co-Investigator
Kerry Knox, Co-Investigator
Robert Gibbons, Co-Investigator
Mark LoMurray (Consultant)

Bryan Yates, Senior Project Coordinator
Lacy Morgan-DeVelder, Lead Trainer
Karen Schmeelk-Cone, Data Manager
Ian Cero, Data Analyst
Timothy McGowan, Trainer
Chelsea Keller, Prevention Specialist
Olivia Lewis, Trainer
Mariya Petrova, Trainer

U.S. Air Force Partners

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Col. Steven Pflanz AFSG
Col. Wendy Travis AFMOA
Col. Chris Robinson, HAF/A1Z
363 & 365 Training Squadrons
Mrs. Jessica Ditson SAFB VPI

Lt Col. David Linkh AFSG
Lt Col. Kathleen Crimmins AFSG
Col. Alicia Matteson HAF/A1Z
Maj. Jordan Simonson HAF/A1Z
SMSgt Chris Vaughan
Mr. Lawrence Brown 363 Training Manager
Effectiveness-Implementation (in progress)

Developing methods and process to study:

**Effectiveness:**
- Does Wing-Connect delivered by USAF reduce suicidal behavior?
- Implemented in training & operational AF bases (First Term Airmen Course)
- Optimize impact (to prioritize limited training resources if scaled up)
  - Impact if exposed in training, operational, or both?
  - Is impact increased as more co-workers trained (saturation, diffusion)?

**Implementation:**
- Leadership support required for effective, sustainable implementation
- Adapt G. Aarons’ Leadership and Organization Change for Implementation (LOCI) measures/indicators
- Identify model to training USAF personnel to deliver
Proposed: Participant flow in Hybrid Effectiveness/Implementation Study

Technical Training School (TTS) at Sheppard AFB

1600 Enrolled
Randomly assigned
800 W-C
800 TAU

4 Global Strike Bases Receiving ~60% of Sample at First-Term Airmen’s Course (FTAC)

FTAC trains all incoming, including enrolled participants
Enrolled Subjects = ~20% total FTAC throughput

Dyess AFB, TX
(120 W-C, 120 Control)

Ellsworth AFB, SD
(120 W-C, 120 Control)

Minot AFB, ND
(120 W-C, 120 Control)

Barksdale AFB, LA
(120 W-C, 120 Control)

Follow-up Assessments
4 Months
8 Months
12 Months

Graduation/PCS

Training Squadrons

362 TRS
B-1 Crew Chiefs*
B-52 Crew Chiefs*

363 TRS
B-1 Armament*
B-52 Armament*

364 TRS
Fuelers
Aircraft Elec
Aircraft Hydraulics

365 TRS
Heavy FC
Heavy C/N
Heavy EW

4 Global Strike Bases Receiving ~60% of Sample at First-Term Airmen’s Course (FTAC)

FTAC trains all incoming, including enrolled participants
Enrolled Subjects = ~20% total FTAC throughput
Randomized Step-Wedge Roll-Out of W-C on Operational Bases

Base #4

Base #3

Base #2

Base #1

Month 3
Randomized Step-Wedge Roll-Out of W-C on Operational Bases
Randomized Step-Wedge Roll-Out of W-C on Operational Bases
Randomized Step-Wedge Roll-Out of W-C on Operational Bases
Randomized Step-Wedge Roll-Out of W-C on Operational Bases

TOTAL # Airmen trained at FTAC over 36 Months

TOTAL W-C trained across 4 Bases:
960 Enrolled
4,256 add’l FTAC Amn
# Distribution of Wing-Conn Exposure at 36 months

<table>
<thead>
<tr>
<th>Base #1</th>
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<tr>
<td>No Wing-Conn</td>
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<tr>
<td>Wing-Conn in TTS Only</td>
<td>0</td>
</tr>
<tr>
<td>Wing-Conn in FTAC Only</td>
<td>120</td>
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<tr>
<td>Wing-Conn in Both</td>
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<tr>
<td>Wing-Conn in TTS Only</td>
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<tr>
<td>Wing-Conn in FTAC Only</td>
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<td>Wing-Conn in Both</td>
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<td>Wing-Conn in TTS Only</td>
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<td>Wing-Conn in FTAC Only</td>
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<td>Wing-Conn in Both</td>
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Finding Ways to Fit Program and Delivery Improvement in Different Settings with Federal Research Mechanisms
Challenges

“Scaling Out”
- Different Population, some of whom have had previous exposure
- Deliver in much different settings
- Mechanism of institutionalization is more expansive
  - Multiple exposures
  - See it in action “try it out and see if it works”
  - Diffusion across a hierarchical network (not peer leader diffusion)
Multiple Exposure and Persuasion predicting number of adopters using simulation

*Figure 3. Comparing Fit of 3 Adoption Mechanisms*

Weiss et al., 2014 Phys Ref X
Analytic Modeling of Diffusion: How does impact depend on training saturation?

Wyman et al., Prev Sci, 2014
Scaling Out: How can we borrow strength from existing data on effectiveness?

• Use Cohesive Health Unit Scale: as a hypothesized climate mediator
  • Group Cohesion
  • Perceived Group Morale
  • Healthy Norms and Practices
  • Number of respectful connections