Integrated Pest Management
- A Simple Solution to Problem Pests in Elderly and Disabled Public Housing
Integrated Pest Management Team

Making life healthier and happier where people live, learn, and heal.
Pests pester
Human ectoparasites
Just want to kill them
Subsidized housing
## Arizona inner-city - public housing

- Residents 62+ senior and/or disabled
- Independent living
- Per-Capita Income by zip code 2017

<table>
<thead>
<tr>
<th>County</th>
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<tbody>
<tr>
<td></td>
<td>43K</td>
<td>9.6K</td>
<td>12K</td>
<td>11.4K</td>
<td>29K</td>
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Rent: 30% of adjusted annual income or 10% of gross
Dedicated staff and upper management teams
Ecological approach

- Inspect
- Monitor
- Implement
- IPM
- Plan
- Evaluate
- Analysis
Pest incidence & ........

- Per-capita income
- Sanitation and clutter scores
- Gender identity
- Smokers
- Pet owners
- Physical disability
- OTC pesticide use
Elderly and/or disabled multiunit, – 612 apartments

We are here to get rid of the bed bugs and cockroaches
We didn’t attempt to change the way people live

We are going to make life easier for you!
Whole-building assessments
Some of the most useful things you get from whole-building inspections

- You get to know people and understand their limitations
- You actually know what's going on, and where — imagine that!
- You can show that even the cleanest apartments have cockroaches when building levels are high
- You get to show you care
German cockroaches *Blattella germanica*

- 1.7-100% of units had cockroaches
B&G Lo Line Cockroach Traps
Bed bugs

*Cimex lectularius*

- 1.7-15% of units had bed bugs
Some severe bite reactions
SenSci
ActivVolcano
Pesticides applied by residents

- Retail (OTC & internet), illicit, outdoor only, and legacy
- 32-60% units has pesticide products
Wide range of pesticide classes

- Pyrethrins/pyrethroid
- Phenylpyrazole
- Borates
- Diatomaceous earth/silica
- Amidinohydrazone
- Organophosphates
- Carbamates
- Second generation anticoagulant
Pesticides applied by residents

- Off-label
- Excessive
- No Personal Protective Equipment
- Hazardous material cleanup ($5K)
Pesticide residues in 8 units – kitchen floor swab samples

- Cockroach bait products could not be detected
- Volatile vapor products were detected
- Not all white powder was Diatomaceous Earth
- Presence doesn’t always mean use
Popular products
Let’s get rid of the cockroaches

- Rotation of fipronil (phenylpyrazole) and dinotefuran (neonicotinoid) bait
- Policies regarding waste disposal
- In-home help
- Vacuuming
Let’s get rid of the bed bugs

- Service protocol to include:
  - wall void CimeXa,
  - rotation of dual MOA (pyrethroid + neonicotinoid),
  - vacuum, dryer use
Residents

- Wheelchair, scooter, walker enabled
- Cardiovascular disease
- Diabetes mellitus
- Cancer
- Legally blind
- Hearing impaired
- Stroke
- Psychiatric
Common sense

- No sanitation or clutter improvements
- It made no sense to ask residents to undertake extensive prep
- Education/communication
- Monitoring/evaluation
- Rotation of German cockroach gel baits
- Policy to empty garbage when resident is absent
- Dumpster etiquette (no diving or dragging)
- Dual action crack and crevice bed bug sprays & CimeXa dust
- Vacuuming
- Laundering (or drying)
- Encasements
Education/communication
- Monitoring/evaluation
- Rotation of German cockroach
- Policy to empty garbage when resident is hospitalized or absent
- Dumpster etiquette
- Dual action crack and crevice bed bug sprays & CimeXa dust
- Vacuuming
- Laundering (or drying)
- Encasements

No extensive resident preparation!!!!!!
87% reduction in German cockroaches - action threshold = 1
93% reduction in bed bugs - action threshold = 1
Sanitation standards **improved and clutter levels reduced**
Improved satisfaction

1 2 3 4 5

Original levels
IPM levels

Resident satisfaction

Satisfaction

Location
Summary

- Only low level bed bugs still persisting in very few units (1-20 live bugs)
- Only low level German cockroaches still persisting in some units (1-20 live bugs)
- Living conditions improved
THANK YOU
Let’s get real

- Residents likely to change their living habits in minor ways only
- We did not and were not trying to reduce costs (initial costs were $0.78/month/unit)
- Pest management service visits taking under 2 minutes/unit
More reality

- Preparation list madness and “insufficient prep” walk-by is a recipe for disaster
- Construction and remodeling reveals pest resources
- Getting control of infestations can take months to years
- We hope that researchers will focus on affordable heat treatments taking a building-wide approach
Our advances in knowledge and technology can be used to uphold standards of housing synonymous with civility, compassion and justice.
Final thoughts for public housing

By 2020, 1 in 6 Americans will be 65 or older

You can manage pests
Residents are a part of solutions waiting to happen
Cost effective pest management is worth it
Appropriate contract specifics are essential
Contractor oversight, and continuous evaluation is essential
Our thanks:

>680 residents who shared their homes,
housing teams who trusted us,
pest control company who accepted guidance,
USDA-NIFA (ARDP & EIP) who invested in us,
Bed Bug Central for consumables,
B&G Equipment Company for consumables,
Arizona Division of Pest Management for muscle,
Carrie Foss – Washington State University,
Tim Stock – Oregon State University,
Rachel Riley (HUD),
Western Region Bed Bug Work Group,
Arizona Pest Management Center,
Robert LaMorte &
Annaka Gouge-Smith,
Padmanand Madhavan Nambiar,
Alfred Fournier & Deanna Li-Fournier
Naomi Pier