

Using Home Oxygen Safely: What Everyone Needs to Know

*When a Private Health Problem
Becomes a Public Safety Threat*



Objectives

- Increase awareness of this public safety issue
- Target patients and families
- Convey our message of concern
- A consistent message throughout the state
- Teach safe or less dangerous practices



How Do We Address the Problem?

- Multi-disciplinary approach
- No one agency owns the problem
- Fire, physicians, tobacco control, housing authority, medical gas supplier and elder service workers are all involved in these high risk situations
- Patients and families



Launched Educational Campaign in 2010

- Targeted to:
 - Patients
 - Families
 - Doctors
 - Caregivers
 - Therapists
 - Hospital discharge social workers
 - Firefighters/EMTs



Home Oxygen a Growing Phenomenon

- Booming elder population
- Shorter hospital stays
- Outpatient procedures and home health services
- Leads to long term oxygen treatment (LTOT)



Public Safety Threat

- If you have a home, family, and/ or friends, you should be aware of home oxygen use and best practices!
 - Smoking on home O2 moves the behavior from being a private health issue to a public safety issue.
 - Now involves the community.



The Massachusetts Fire Problem

- Since 1997, O2 has been involved in:
 - 40 fire deaths
 - 93 serious injuries
 - 7 firefighter injuries
 - 121 identifiable incidents
- In 2017 alone, there were 6 severe incidents involving O2 (all involved smoking)
- In 2018 (to date) there were 2 incidents with 1 death and 1 injury

** based on fire and burn reports received by the Fire Data and Public Education Unit*



Older Adults at Greatest Risk for Fire Death

- Nationally, older adults and children under 5 at greatest risk for fire deaths
- In MA, older adults (people 65+) were 41% of 2017 fire deaths
- This is an increase from 2016.



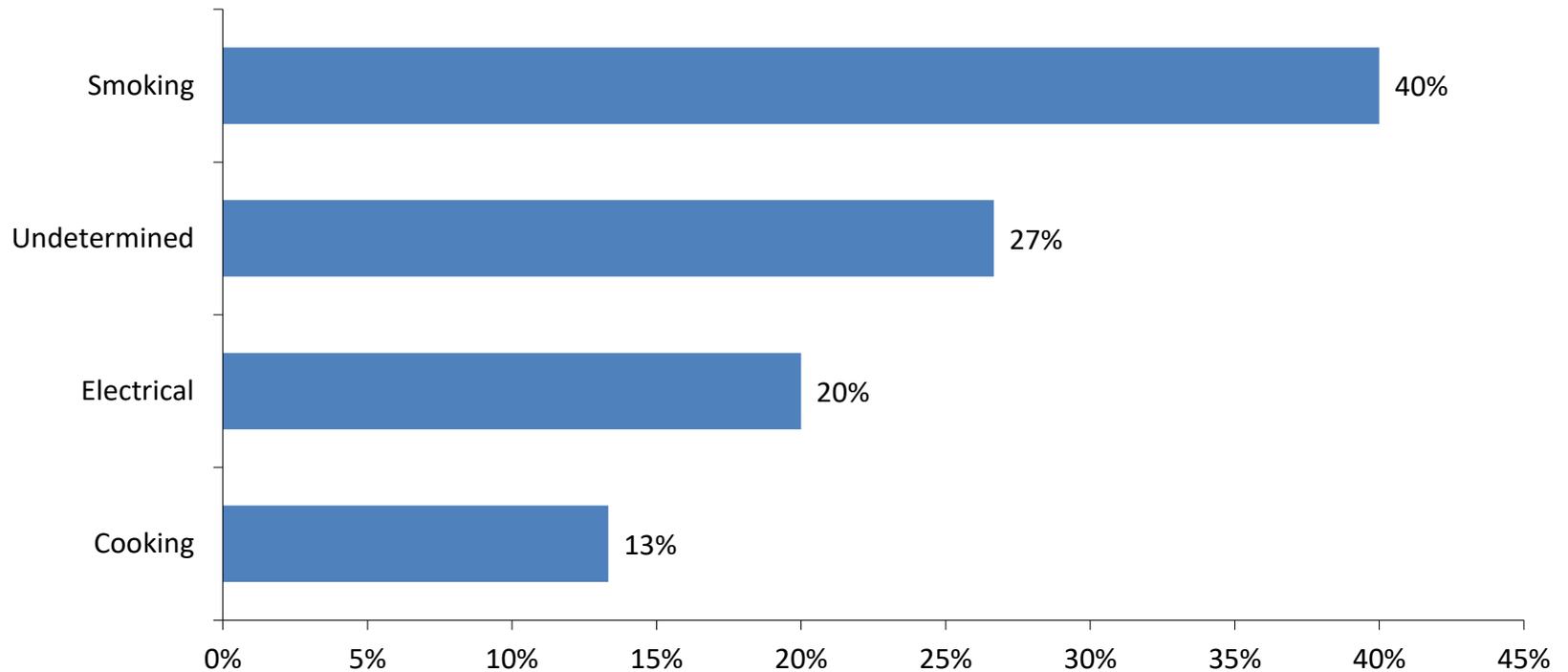
Smoking Leading Cause of Fire Deaths

- Smoking remains the leading cause of fire
- deaths:
 - Nationally
 - In MA for older adults (60%)

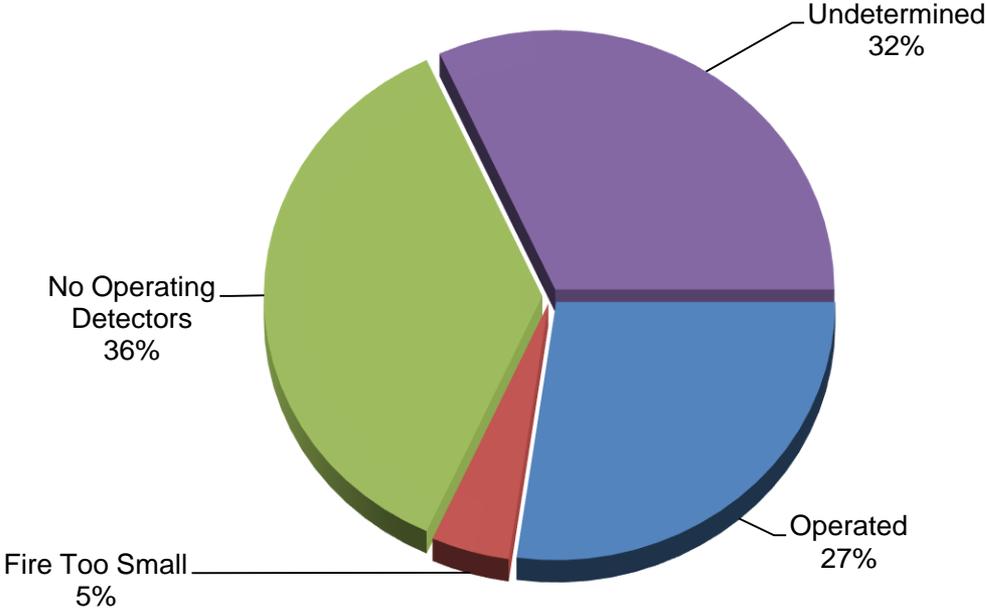


2016 Causes of Senior Fire Deaths

2016 Causes of Senior Fire Deaths in MA Residential Fires



Smoke Alarm Performance & Senior Fire Deaths 2017



What We Want

- We want:
 - smokers to keep themselves and their families safe;
 - to protect other people living in the building from fire;
 - to protect firefighters;
 - to preserve housing;
 - to save pets;
 - save a lifetime of possessions.



Winthrop Housing Authority

- Friday, October 13, 2000, 5:45 a.m.
- 57-year old woman on home O2 – lit cigarette
- Did not alert other tenants after fire started - found on a bench smoking
- 3 people injured



Winthrop: 3 Alarm Fire

- Danger to firefighters:
 - Empty O2 canisters not removed.
- Fortunately:
 - Fire doors were closed - prevented spread of fire to attached building
- In the end:
 - 16 units of elder housing lost in 1 building
 - 90 seniors evacuated
 - Over \$551k in fire, smoke & water damage
 - 1 year to rebuild; rebuilt with sprinklers



“A day I will never forget.”

“My phone rang and a firefighter informed me that one of the Winthrop Housing Authority buildings was on fire.”

*Comments from Alice Hayes,
Director of Winthrop
Housing Authority*



- A resident, on oxygen, decided she wanted a cigarette. She lit her cigarette, slid the mask over and BOOM, the mask area ignited, traveled through the hose to the machine--- and exploded.”



Plymouth Senior Housing

- August 4, 2006, 11:45p.m.
- Victim on home O2 & smoking
- 1 FF injury (broken wrist); several treated for smoke inhalation
- \$500k in damages
- 15 people displaced
- No sprinklers

Non-fatal – but look at the destruction!



Plymouth Senior Housing

- Room of Origin



Plymouth Senior Housing

- Room of Origin



Room of Origin



O2 Cylinders



DEPARTMENT OF FIRE SERVICES
Division of Fire Safety

Room of Origin – O2 Tubing



Plymouth Senior Housing

Cigarettes

O2 Tubing



DEPARTMENT OF FIRE SERVICES
Division of Fire Safety

What Home Oxygen Should Look Like...



What Home Oxygen Should NOT Look Like



Fatal Fires

- Lunenburg – May 2008
- Hadley Inn – Nov. 2008
- Fitchburg – Aug. 2009
- Quincy – Dec. 2009
- Lynn – February 2010
- Worcester – February 2010
- Springfield – Oct. 2010
- New Bedford – Jan. 2011
- Taunton- June 2011
- Haverhill – March 2012
- Westfield – February 2013
- Chelsea – October 2016
- West Springfield – Nov. 2017
- Quincy – February 2017
- Haverhill – February 2017
- Andover – March 2018



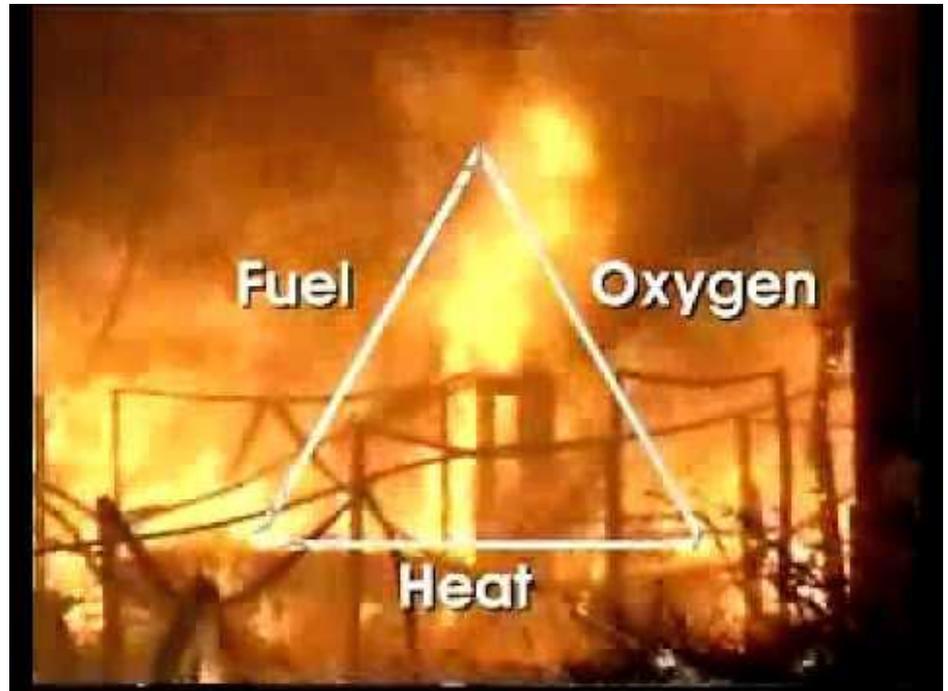
Victim is Not Always the Smoker

- Quincy, February 11, 2017
- 67-yr old woman on home O2 started the fire by smoking
- 19-yr old grandson who lived with her was trapped by the fire



Oxygen & Fire Safety

- Lowers the energy required to ignite materials
- More air (O₂), makes the fire spread faster



Facts about Oxygen



- Exists as a gas at room temperature
- Stored in a liquid state at very low temp (-300 F.)
- Non-flammable – does not burn or catch fire
- Oxidizer
 - Supports combustion
 - Lowers the energy required to ignite materials
 - Flame retardant materials can burn in an enriched oxygen atmosphere





Don't smoke around medical oxygen.

Fire needs oxygen to burn. When more oxygen is in the air, any fire that starts will burn hotter and faster than usual. There is no safe way to smoke in the home when oxygen is in use.

U.S. Fire Administration |  FEMA | 



No fumes alrededor de tanques de oxígeno.

El fuego necesita oxígeno para prenderse. Ante la presencia de más oxígeno el fuego se prende más rápido y más caliente que lo normal. No hay forma segura de fumar en una casa cuando se usa el oxígeno.

U.S. Fire Administration |  FEMA | 



Oxygen Saturates

- O₂ soaks into furniture, clothes, bedding, rugs, drapes
- O₂ soaks into hair, beards
- O₂ leaks into home's "atmosphere"
- Creates oxygen-enriched environment
 - (25% O₂ or more)
- Lowers temperature these things can first ignite
- Spreads a fire more quickly



Home O2 Rules To Live By

- Avoid oil-based products
- Oils, grease & petroleum products can catch fire when exposed to high O2 concentrations
- Avoid oil-based lotions, lip balms, petroleum jelly, or aerosol sprays



Home O2 Rules To Live By (cont.)

- Keep 10 Feet from possible ignition sources:
 - **Smoking materials** – cigarettes, matches, lighters
 - **Small appliances** – electric razors, hair dryers
 - **Pilot lights** – in appliances, stoves, water heaters
 - **Heating sources** – furnaces, space heaters, woodstoves, electric blankets
 - **Cooking**
 - **Candles**
 - **DO NOT** allow occupants to smoke in homes where medical O2 is being used. Encourage occupants to quit or to smoke outside.



Fire Safety in the Home

- For everyone but crucial for those with home O2 systems
- Working smoke alarms every level and outside bedrooms
- Consider extra smoke alarms inside bedrooms
- Escape Plan
 - 2 Ways Out & Meeting Place
- Keep phone by bed or chair
- Keep exit pathways clear



No Smoking in the Home

- By:
 - LTOT patient
 - Family members
 - Visitors
 - Caregivers
 - ANYONE



- ~ Signs should be posted
- ~ Encourage patient to get help quitting
- ~ Don't enable



Until the Smoker Quits

- Shut off the O2
- Wait 10 minutes
- Go outside to smoke
- Allows O2 to dissipate from hair and clothes
- Not safe, but safer
- No guarantees



Think About Quitting

- Patients should ask Dr. about help
 - Many new medicines make quitting easier
- Doctors should make cessation referral before prescribing home O2
- E-cigarettes can pose a threat of fire. This is not a good substitution for smoking cigarettes
- Free telephone counseling & referral
 - MA Smokers' Helpline 1-800-Try-To-Stop
 - www.trytostop.org
- American Cancer Society www.cancer.org
1-800-227-2345
- American Lung Association www.lungusa.org



Video



DEPARTMENT OF FIRE SERVICES
Division of Fire Safety

Talk to Your Doctor

- Patients should ask Dr. about help
 - Many new medicines make quitting easier
- Doctors should make cessation referral before prescribing home O2
- Free telephone counseling & referral
 - MA Smokers' Helpline 1-800-Try-To-Stop
 - www.trytostop.org
- American Cancer Society www.cancer.org
1-800-227-2345
- American Lung Association www.lungusa.org



Firefighter Safety Issue

- Firefighters often unaware of O₂ presence
 - Post sign Oxygen in Use
 - Notify E-911
- Fire less predictable when fueled by O₂
- Flashover can occur sooner
- Cylinders can explode - danger of shrapnel
- Protective gear at greater risk



Firefighter Safety Issue (cont.)

- Fire retardant materials can burn in oxygen enriched environments
- Nomex, a common fire retardant material used in firefighter's protective gear, burns vigorously in a 31% oxygen atmosphere



Home Oxygen Safety

- Home oxygen safety campaign developed with partners: medical oxygen suppliers, physicians, MDPH, visiting nurses, and more.
- Public awareness campaign on radio and TV
- Hand off program for FDs, PPT training program, sample press release, educational pamphlet and posters.
- Collaboration with community partners key.



DFS Home O2 Campaign Components

- Printed pamphlet available at the [Massachusetts Public Health Clearinghouse](#)
- Poster
- Firefighter Education Guidelines
- Website – www.mass.gov/dfs and type in the search bar “Home Oxygen Safety”
- TV PSAs



Medical Equipment Suppliers

- See this first-hand every day
- By law, can't just stop delivering O2 when see evidence of smoking
- Can't force residents to post no smoking O2 signs
- HIPPA also restricts whom they can contact
- Anyone can make referrals to Elders at Risk
- Thousands of installations – many short-term



Landlords

- Issues:
 - Nobody wants to force sick, elderly people out onto the street
 - Leases usually do have clauses about posing a threat to other tenants
 - Effective leverage in getting patients to get help quitting smoking or face eviction
 - Eviction means little to terminally ill





What Landlords Can Do

- Housing authorities develop policies that tenant smoking is grounds for eviction
- Progressive action – warnings, proof of cessation, etc. can stop action
- Has proven most effective
- Install sprinklers
- Use federal FIRE Act grant funds
- Join New Smoke-Free Building Registry
 - <http://makesmokinghistory.org/smoke-free-environments/smoke-free-housing/for-landlords/>



What the Fire Department Can Do

- Express concern 1st and foremost
- Ask residents to alert E-911 about O2 so you can help them in a power outage
- Promote greater general awareness using educational tools
- As part of multi-disciplinary approach, the FD can educate patient and family using Education Guidelines developed by DFS
- Develop protocol on when to ask to educate and when to refer to another agency (FD = mandated reporter)



Resources

- U.S. Fire Administration
 - www.usfa.dhs.gov/
 - Special Report on Fires Involving Medical Oxygen Equipment, March 1999
<https://www.usfa.fema.gov/downloads/pdf/publications/tr-107.pdf>
 - Smoking and Home Fires campaign
<https://www.usfa.fema.gov/prevention/outreach/smoking.html>
 - Fire Safety for People 50 Plus campaign
https://www.usfa.fema.gov/prevention/outreach/older_adults.html



More Resources

- National Fire Protection Association
 - www.nfpa.org
 - *Fires & Burns Involving Home Medical Oxygen, M. Ahrens, August 2008.*
 - *Remembering When: A Fall & Fire Prevention Program for Older Adults*



Studies

MMWR – April 23, 2008

Fatalities from Fires Resulting From Smoking during Oxygen Therapy – Maine, Massachusetts, New Hampshire and Oklahoma, 2000-2007, A. Pelletier, Maine Department of Public Health



In Summary



Home Oxygen “Rule of 10”:

- Keep 10 feet away from all ignition sources
 - ex: electric appliances, candles, stoves, heaters
- Occupants of O₂ enriched environments **MUST** wait 10 minutes & go outside before smoking
 - Allows saturated clothing and hair to return to “normal” O₂ levels



Don't Let Your World Go Up In Smoke.

**Home fires
are preventable.**

**Never smoke around
medical oxygen.**

Medical oxygen can explode if a flame or spark is near. Even if the oxygen is turned off, it can still catch on fire. If you smoke cigarettes, it is always safer to smoke outside.

U.S. Fire
Administration



FEMA



Learn more about fire prevention: www.usfa.fema.gov



DEPARTMENT OF FIRE SERVICES
Division of Fire Safety



For More Information

Contact:

- Department of Fire Services
Fire Data and Public Education Unit
P.O. Box 1025
State Road
Stow, MA 01775
978-567-3380
- www.mass.gov/dfs click on “Fire Safety Topics” and “Home Oxygen Safety”

