



**DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON DC**

MEMORANDUM FOR ALMAJCOM/SG
ALMTF/CC

FROM: AF/SG3/5
7700 Arlington Blvd, Suite 5151
Falls Church, VA 22042

SUBJECT: Evaluation of Mold Exposure Complaints

Concerns about the effects of exposure to indoor fungi (mold) on human health have become more common in recent years. Concerns among Airmen and their families about the potential for mold exposure may drive requests for inspection and remediation. The most common health problems associated with mold exposure in otherwise healthy individuals are allergic and irritant disorders, including asthma, allergic rhinitis, and rhinosinusitis. In rare cases, seriously immunocompromised individuals may be at risk for mold infections. Please see attachment 1 for additional information.

Resources for mold inspection and remediation in base housing are available to Air Force Service members and their dependents. Airmen seeking inspection and remediation should contact their local housing management office, with the support of their chain of command, where necessary. Where unresolved issues persist, Airmen should call the AF Housing Hotline at 1-800-482-6431. Those residing on an Army and Navy installations should also contact their housing management office or call the Army Housing Registry Hotline at 1-800-984-8523 or the Navy Housing Hotline at 1-757-953-0737.

Any medical concerns, to include concerns related to potential mold exposure, will be worked through the Primary Care Managers. Where additional support is required, personnel should be referred to the USAF School of Aerospace Medicine (USAFSAM) Environmental, Safety, and Occupational Health (ESOH) Service Center at 1-800-232-ESOH (3764). Please see attachments 1-4 for additional details.

Patients presenting with symptoms of asthma, hypersensitivity pneumonitis, rhinitis, or rhinosinusitis should be evaluated clinically for these disorders. Once a diagnosis has been established, testing for mold or other specific allergic and environmental triggers may be appropriate. Patients who continue to experience symptoms despite a negative evaluation for mold allergy should be assessed for other causes of illness.

If, after appropriate evaluation, your patient has evidence of a mold-related illness, and reports ongoing exposure to unremediated mold at an Air Force installation facility to include privatized housing, please contact the Installation Occupational and Environmental Medicine Consultant (IOEMC) or his/her delegate to initiate an evaluation of that facility. The IOEMC is typically the Chief of Aerospace Medicine or occupational medicine physician. The IOEMC

will work with the installation Bioenvironmental Engineering Flight and the local housing office to determine appropriate follow-up actions. Please see attachment 5 for additional details.

For all questions related to indoor air quality or exposure to indoor mold, Air Force medical personnel should reference the *Technical Guide for Indoor Air Quality Surveys* ([AFRL-SA-WP-SR-2014-0012](#)), July 2014 or contact their base Bioenvironmental Engineering Flight.

This memorandum supersedes memo, “Mold Exposure Information for Air Force Medical Service (AFMS) Providers” dated 7 March 2016. The AF/SG POC for this memorandum is Col Jay Vietas, Consultant to the AF/SG for Bioenvironmental Engineering, AFMSA/SG3PB, 703-681-6834 (DSN 761) or jay.a.vietas.mil@mail.mil.

ROBERT I. MILLER
Major General, USAF, MC, SFS
Director, Medical Operations and Research
Office of the Surgeon General

2 Attachments:

1. Guide for Clinicians Caring for Patients with Mold-related Complaints, 9 April 2019
2. Information Flow for Patient Concerns

Guide for Clinicians Caring for Patients with Mold-related Complaints

General Background information

- Mold is ubiquitous in both indoor and outdoor environments, year round, and is usually harmless to most people. Higher levels of mold may be present in moist or humid environments, including after rainfall.
- Molds and their spores circulate through the air and may be present on surfaces.
- Mold exposure may be associated with a variety of effects, symptoms, and health conditions.
 - The most common result of excessive mold growth is an unpleasant odor due to the volatile organic compounds (VOCs) molds produce.
 - Airborne mold or mold particles may trigger IgE-mediated allergic or asthmatic reactions or irritant/non-allergic responses in sensitive or predisposed individuals (many of whom demonstrate symptoms to a variety of environmental allergens or irritants such as dust mites, cockroaches, mice droppings, pollen, pet dander, viruses, bacteria, tobacco smoke, scented candles, air fresheners, etc.). About 10% of the population may be allergic to mold, and about half of those allergic will manifest clinical symptoms (nasal stuffiness, lacrimation, red and itchy eyes, coughing, sneezing, wheezing, and itchy skin or eczema) after exposure to airborne mold.
 - Much less common conditions associated with mold sensitization are allergic bronchopulmonary aspergillosis, allergic fungal sinusitis, or hypersensitivity pneumonitis.
 - Infections due to mold generally occur in persons who are immunosuppressed (e.g., people being treated for cancer), who have chronic lung illnesses (e.g., obstructive lung disease), or who have experienced overwhelming exposure (e.g., in industrial or agricultural settings such as grain silos). There are a few virulent molds that may cause infections in healthy persons: *Blastomyces*, *Coccidioides*, *Cryptococcus*, and *Histoplasma*. Offending organisms can usually be identified by testing body fluids or cavities (fungal cultures). Infections due to mold are distinct illnesses identified by specific diagnoses (e.g., acute pulmonary blastomycosis). Treatment, if indicated, may include anti-fungals and surgical procedures, and should be done in accordance with current infectious disease guidelines.
 - Many molds can produce toxins (“mycotoxins”) under certain conditions. Exposures to mycotoxins sufficient to cause adverse health effects generally occur only by ingestion (e.g., aflatoxin in peanuts) or with overwhelming (e.g., industrial or agricultural) airborne exposures. Currently, there is insufficient research to validate testing blood or urine for mycotoxin levels except in rare acute poisonings.
- Patients with underlying allergic conditions (including asthma), immunosuppression, or who are at the extremes of age are more prone to develop mold-related symptoms or disease.

Mold Growth

- Mold can enter homes through open doorways, windows, vents, and heating and air conditioning systems. Mold in the air outside can also attach itself to clothing, shoes, bags, and pets, and can be carried indoors. In the presence of moisture, mold grows well on paper products, cardboard, wood products, dust, paints, wallpaper, insulation, drywall, carpet, fabric, and upholstery.

- Generally speaking, indoor mold levels are lower than outdoor mold levels, but this may vary in certain climates (e.g., in especially arid areas).
- There are no health standards to define what unacceptable levels of mold in the indoor environment are.
- Unchecked mold growth in an indoor, inhabited area is not an acceptable situation, regardless of whether there are associated symptoms or health problems.
- Mold growth smells bad, is unsightly, and ruins the building materials on which it grows. Appropriate response and remediation are documented elsewhere. The Environmental Protection Agency's (EPA) recommended mold remediation guidance is based on physical inspection for mold and water damage. If mold is visible, it should be cleaned or removed (e.g., non-porous surfaces can generally be cleaned with soap and water or disinfected by 1:10 hypochlorite solution, whereas porous material may require sterilization or replacement). The moisture source that supports mold growth should be stopped
- The following are indicators of possible increased levels of mold: presence of visible mold or discoloration; musty or mildew odor; and history of water intrusion or condensation. Humidifiers, house plants, aquariums, terrariums, indoor pools, or water fountains may serve as sources of moisture or harbor mold.

Mold Testing in People

- Low levels of mycotoxins are found in many foods and in the urine of healthy persons.
- The presence of mycotoxin in the blood or urine is not an indication of disease or illness. Mycotoxin levels that predict disease have not been established.
- Urine mycotoxin tests are not approved by Food and Drug Administration (FDA) for clinical use, and the CDC does not recommend biologic testing of persons who work or live in water-damaged buildings.
- For persons using direct-to-consumer laboratory tests that have not been approved by the FDA for diagnostic purposes, their health care providers need to understand that these tests might not be valid or clinically useful. Using laboratory tests which have not been approved by the FDA to diagnose illness can lead to wrong diagnoses, unnecessary patient anxiety, and inappropriate and potentially harmful medical interventions.

Clinical Management of Patients with Mold Concerns

- Medical providers should evaluate and treat patients who are concerned about mold exposure by focusing on their clinical conditions. History and symptoms should guide physical exam, testing, diagnosis, and treatment. Evaluation for mold allergy should be done for clinical indications, and not in response to the results of environmental tests. Diagnosis of mold-related allergy or illness should be made after an appropriate medical evaluation.
- Medical providers should avoid interpreting direct-to-consumer mold tests, or clinical tests that are not approved by the FDA (e.g., measurements of indoor air quality mold testing, concentrations of mycotoxins in blood or urine, or other test). Such lab tests do not have established reference standards and cannot be properly interpreted in relation to either human health or building habitability.
- Medical providers should consult with Installation Occupational and Environmental Medicine Consultant (IOEMC), who will in turn coordinate with Bioenvironmental Engineering, Public Health and/or United States Air Force School of Aerospace Medicine (USAFSAM) as indicated prior to commenting on the habitability, integrity, or remediation requirements of specific buildings.

If you are concerned that a patient's symptoms are the result of exposure to mold in their home or workplace, you may choose to write a letter of support. Please keep in mind that it is impractical to write a prescription or letter stating the patient "must not be exposed to mold" or "must not live in a house or be in a building with mold."

-- It is impossible to avoid all mold exposure. Typical mold spore concentrations vary and can be from 1,000 up to 10,000 mold spores per cubic meter in outdoor air.

-- Such notes are confusing, tend to heighten anxiety, and may result in the patient losing his or her job, or being forced to relocate.

-- Statements that may be more accurate and helpful could include wording such as, "The patient is allergic or sensitive to mold and has experienced symptoms consistent with mold allergy. It is recommended that mold exposure be minimized, either through mold remediation, building (e.g., ventilation) modification, relocation, or, as a last resort, use of personal protective equipment (e.g., respirator)."

• Finally, you should recommend that individuals who are sensitive to mold should attempt to minimize their exposure to outdoor areas that are likely to have higher levels of mold (e.g., compost piles, cut grass, wooded areas). For individuals who have medical conditions exacerbated by or related to indoor environmental triggers, controlling or eliminating the sources of indoor/building mold and other indoor allergens, along with medical treatment, will lead to improvement or resolution of symptoms.

References

1. Institute of Medicine. Damp indoor spaces and health. The National Academies Press. Washington, DC, 2004. <https://www.nap.edu/read/11011/chapter/1>. Page last accessed March 6, 2019.

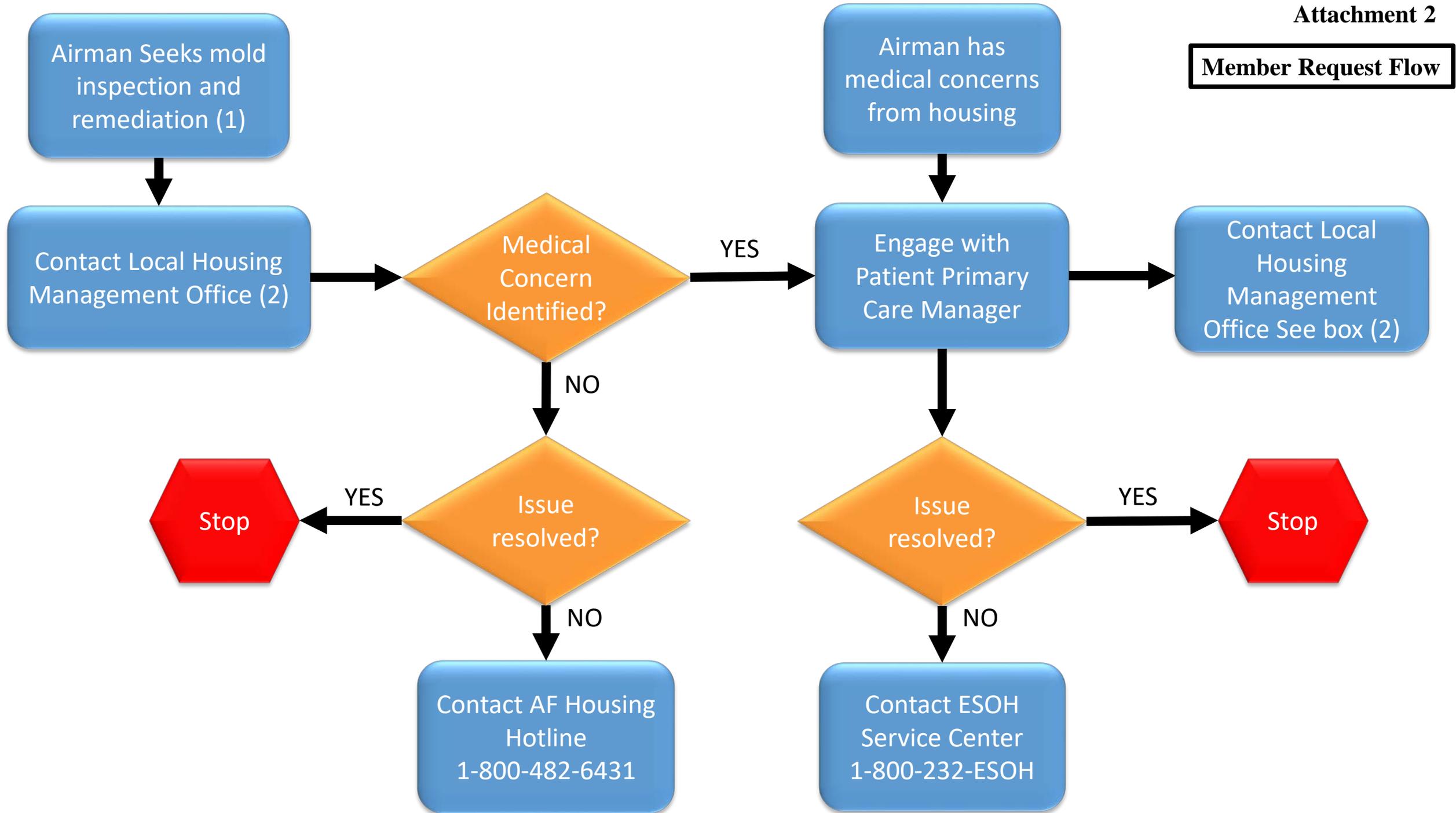
2. CDC. Mold. <https://www.cdc.gov/mold/>. Page last accessed March 6, 2019.

3. EPA. Mold Remediation in Schools and Commercial Buildings Guide. US Environmental Protection Agency, Office of Air and Radiation, Indoor Air Division. EPA 402-K-01-001, Reprinted September 2008. <https://www.epa.gov/mold/mold-remediation-schools-and-commercial-buildingsguide>.

4. Bush RK, Portnoy JM, Saxon A, Terr AI, Wood RA. The medical effects of mold exposure. American Academy of Allergy, Asthma and Immunology environmental and occupational respiratory disorders position paper. February 2006. J Allergy Clin Immunol Volume 117, Number 2. <https://www.ncbi.nlm.nih.gov/pubmed/16514772>. Page last accessed March 6, 2019.

5. Navy and Marine Corps Public Health Center. Guide for Clinicians Caring for Patients with Mold-related Complaints, 14 March 2019.

Member Request Flow



PCM Engagement with Concerned Patient

Patient Concerned about Housing Exposure

Perform Clinically Focused Exam

Symptomatic or Clinical Abnormalities Identified?

NO

Medical Issue Consistent with Environmental Exposure?

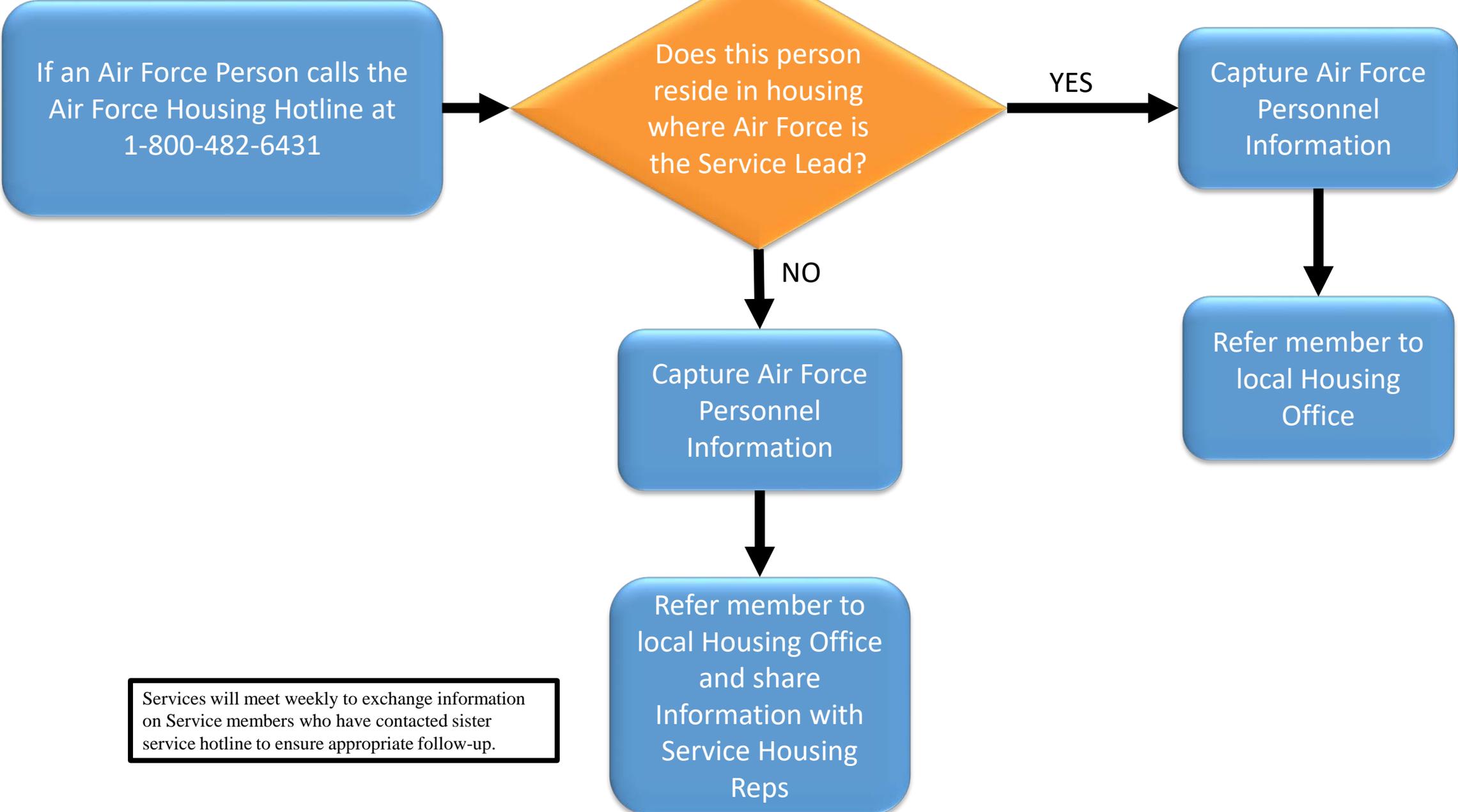
YES

Treat Patient IAW Standard of Care and refer to IOEMC and Corrdinate as required with local BE, PH, USAFSAM and Housing Office

NO

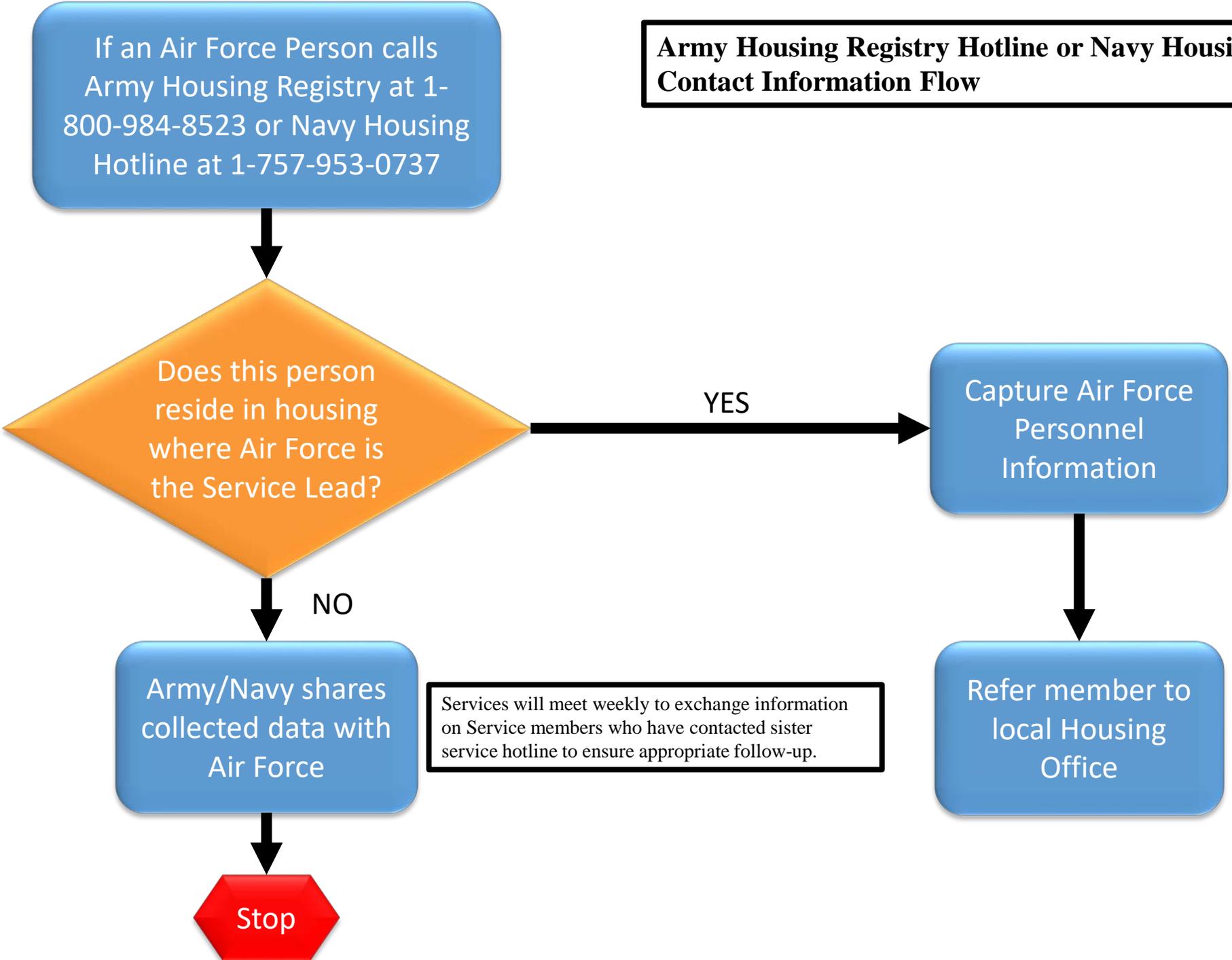
Treat Patient IAW Standard of Care and Refer to IOEMC if Patient Concerns persist

Air Force Housing Hotline Contact Information Flow



Services will meet weekly to exchange information on Service members who have contacted sister service hotline to ensure appropriate follow-up.

**Army Housing Registry Hotline or Navy Housing Hotline
Contact Information Flow**



If an Air Force Person calls Army Housing Registry at 1-800-984-8523 or Navy Housing Hotline at 1-757-953-0737

Does this person reside in housing where Air Force is the Service Lead?

YES

Capture Air Force Personnel Information

NO

Army/Navy shares collected data with Air Force

Services will meet weekly to exchange information on Service members who have contacted sister service hotline to ensure appropriate follow-up.

Refer member to local Housing Office

Stop