

PROTOCOL TITLE: Residential Wood Smoke Interventions Improving Health in Native American Populations

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PROTOCOL AND REVISION HISTORY:

Version Approval Date, mm/dd/yyyy	Summary of Change
01/27/2014	Original protocol IRB approval
11/18/2014	Protocol additions for blood pressure, heart rate, and saturated oxygen measures and for nicotine wipe sample to validate reporting of household smoking.
09/09/2015	The following change as made to the protocol due to request by tribal community partners: Removal of the bronchodilator portion of the spirometry measure
11/10/2015	The following changes were made: 1. Revision of Household Characteristics question on household smoking 2. Addition of an End of Winter Questionnaire
10/27/2014	Data collection protocols and forms
10/31/2016	Final version of instructions for Field Personnel

ATTACHMENTS:

Protocol Instructions for Field Personnel

Data Collection Forms

Statistical Analysis Plan

Elders Home Visit Protocol – Winter 1

INITIAL CONSENT AND PAPERWORK VISIT

Note: Complete the **“Initial Consent & Paperwork Checklist”** as you progress through the following tasks.

1. When enrolling a home, assign a Home ID using the following scheme:
 - a. **Home Identification Example: NPE_5101.** “NPE” refers to Nez Perce Elders. The “1” after the number 5 refers to the first cohort of EldersAIR homes enrolled. This number will be “2” in 2015/2016. The “01” refers to this being the first home enrolled in the cohort, “02” the second, and so on.
 - b. **Participant Identification Example: NPE_5101a.** To the home ID, we add a lowercase a, b, etc. for each participant residing within home NPE_5101. The first Elder is assigned “a,” and the next Elder “b”.
2. Review the **“Informed Consent”** and study timeline with the participant(s).
3. If the participant(s) agrees to participate, obtain the signed **“Informed Consent.”**
4. Provide a copy of the **“Informed Consent”** to the participant(s) for their records.
5. Explain the **“HIPPA/Personal Health Information form”** to the participant, and ask them to complete the form.
6. Provide the **“Demographics”** and **“Home Characteristic Data Sheet”** to the participant(s) to complete. Note: a demographics form is needed for each participant.
7. Complete the **“Health History Form”** by interview.
8. Install the iButton on stove.
 - a. If their stove has legs, attach the iButton’s ball-chain around the upper, back, right leg and secure.
 - b. If it is a pedestal stove (or as needed), attach the button to the lower, right, backside of stove via magnet.
 - c. Note the iButton’s location should be comfortably warm to the touch of the hand.
9. Complete the appropriate sections of the **“iButton Data Sheet.”**
10. Provide the **“Study Contact Information”** to the participant(s) and let them know they can contact you at anytime with questions.
11. Complete the scheduling section of the **“Initial Consent & Paperwork Checklist”** by first asking if the participant(s) have had a respiratory tract infection in the last three weeks. If **“YES,”** the Sampling Set Up visit will need to be delayed accordingly (when possible).
12. After the visit, request a copy of the participant’s medical record (all identifying information needs to be blacked out).

EldersAIR Database:

1. When you receive an **“Informed Consent,”** a **“Demographics form,”** and Contact Information from a household, select **“Enroll Home”** from the dashboard of the EldersAIR database.
2. Complete the fields for the **“Enroll Home”** option and click **“enroll”** at the bottom.
3. Next, select **“Enroll Elder”** from the **“ELDERS”** section of the home you just created.

4. Complete the fields using the information provided in the **“Informed Consent,” “HIPPA/Personal Health Information form”** and **“Demographics form.”**
5. When multiple Elders are participating in a household, repeat steps 3-4 for each eEder.
6. Return to the home’s main page by selecting **“Show Home”** from the top of the Elder’s page.
7. Under the **“SCHEDULE”** section, select **“Initial Visit”** from the list.
8. Enter the **“Actual Date”** and **“Actual Time.”**
9. Click **“Save.”**
10. Next, enter the appropriate forms for the household.
 - a. **Home Characteristics:** Under the **“FORMS”** section of the home page, select **“Home Characteristics”** from the list. Enter the fields using the **“Home Characteristics”** form and select **“Save.”**
 - b. **iButton:** Under the **“FORMS”** section of the home page, select **“iButton”** from the list. Enter the fields using the **“iButton Data Sheet”** and select **“Save.”**
11. Next, enter the appropriate forms for each Elder.
 - a. Select the appropriate Elder ID under the **“ELDERS”** section of the home.
 - b. **Demographics:** Under the **“FORMS”** section of the Elder’s page, select **“Demographics”** from the list. Enter the fields using the **“Demographics”** form and select **“Save.”**
 - c. **Health History:** Under the **“FORMS”** section of the Elder’s page, select **“Health History.”** Enter the fields using the **“Health History”** form and select **“Save.”**
 - d. Repeat steps **“a”** through **“c”** for each participating Elder.
 - e. **Medical Record:** Under the **“FORMS”** section of the Elder’s page, select **“Medical Record.”** Enter the fields and upload the deidentified file. Select **“Save.”**
12. If you scheduled the Sampling Set Up Visit, return to the Home’s main page by selecting **“Show Home”** at the top of the Elder’s page.
13. Under the **“SCHEDULE”** section, select **“Sampling Visit 1”** (or **“Sampling Visit 2”**) from the list.
14. Enter the **“Appointment Date”** and **“Appointment Time.”**
15. Click **“Save.”**

SAMPLING SET UP VISIT

Sampling is completed 2x per winter. When possible, the 2nd sampling visit should occur a minimum of 3 weeks after the 1st sampling visit.

Note: Complete the **“Sampling Set Up Checklist”** as you progress through the following tasks.

1. Find a place across the room from the stove to place the DustTrak (See **“DustTrak Protocol”** for programming the equipment prior to the visit).
 - a. If they already have a table or surface to use, go for it. If not, set up the tv-tray where it won’t easily be knocked over by people or pets.
 - b. The DustTrak needs to be plugged in to a working wall outlet.
 - c. Turn the DustTrak on and start the program.
 - d. Attach the Humidity Monitor to the DustTrak.

- e. Complete the appropriate sections of the **“DustTrak Data Sheet”** and **“Humidity Monitor Data Sheet.”**
2. Introduce the MicroPEM and holder.
 - a. Clip the FitBit Zip to the MicroPEM pouch (see FitBit Zip Activity Monitor Protocol).
 - b. Describe how to wear it.
 - c. Inform them of when to wear it.
 - d. Inform them that you will be calling to check in on the MicroPEM in 24 hours.
 - e. Complete the appropriate sections of the **“MicroPEM Data Sheet.”**
3. Sit down with the participant to go through the white binder contents.
 - a. Describe how to fill out all the forms over the next 48 hours.
 - i. **“Home Activity Log”**
 - ii. **“Wood Stove Usage Log”**
 - iii. **“In-Home Log”** (how often they’re in their house)
4. Download the iButton data and complete the appropriate sections of the **“iButton Data Sheet.”** Note: the same “iButton Data Sheet” will be used at all visits.
 - a. If using a PC to download the iButton, restart the mission with the software. Check to make sure that next to “Is Mission Active?” it says “true,” the “sampling rate” is equal to 25 minutes,” and next to “roll over enabled?” it says “true.”
5. **1ST Winter Visit ONLY:** Take photos of the wood stove, stovepipe, etc. as detailed in the “Stove Photo Protocol.”
6. Ask if you can take or trade a piece of wood so you can test the moisture content. Label the piece of wood with the home ID.
7. Schedule the “Sampling Pick Up & Health Measures Visit” and review the health measures that will be completed.
 - a. Complete the **“Scheduling Spirometry”** form via interview. See also “Scheduling Spirometry Protocol.”
 - b. Explain any scheduling delays that will need to occur to account for medication usage and/or smoking.
 - c. Schedule a time for the health measures when the appropriate time between use of medications and/or smoking will have the least impact.
8. **After the visit/at the office**, split the piece of wood obtained from the homeowner and complete the **“Wood Moisture Tracking Form.”** Note: It is important to take the moisture reading from the inside of the wood to provide the most accurate measurement.

EldersAIR Database:

1. From the dashboard, select “View All Homes.”
2. Select the appropriate Home ID from the list.
3. Under the “SCHEDULE” section, select “Sampling Visit 1” (or “Sampling Visit 2” if second visit) from the list.
4. Enter the “Actual Date” and “Actual Time.”
5. Click “Save.”
6. Next, enter the appropriate forms for the household.

- a. **Wood Moisture** (1st Visit ONLY): Under the “FORMS” section of the home page, select “Wood Moisture” from the list. Enter the fields using the “Wood Moisture Tracking” form and select “Save.”
 - b. **Stove Photos** (1st Visit ONLY): Under the “FORMS” section of the home page, select “Stove Photos” from the list. Upload the appropriate stove photos and select “Save.” Note: You may want to save after each couple of photos. The uploads are slow, and it may seem like it is not working if you try to upload all of the photos at once.
 - c. **iButton**: Under the “VISIT 1 FORMS” (or “VISIT 2 FORMS”) section of the home page, select “iButton Update” with the appropriate visit date listed next to it. Enter the fields using the “iButton Data Sheet” and select “Save.”
7. Next, enter the appropriate forms for each Elder.
 - a. Select the appropriate Elder ID under the “ELDERS” section of the home.
 - b. **Scheduling Spirometry**: Under the “VISIT 1 FORMS” (or “VISIT 2 FORMS”) section of the Elder’s page, select “Spiro Scheduling.” Enter the fields using the “Scheduling Spirometry” form and select “Save.”
 - c. Repeat steps “a” and “b” for each participating Elder.
 8. Return to the Home within the database by selecting “Show Home” at the top of the Elder’s page.
 9. Enter the Sampling Pick Up & Health Measures Visit appointment.
 - a. Under the “SCHEDULE” section, select “Pickup/Health Measures 1” (or “Pickup/Health Measures 2”) from the list.
 - b. Enter the “Appointment Date” and “Appointment Time.”
 - c. Click “Save.”

SAMPLING CHECK IN CALL

1. **After 24 hours**, call the participant(s) to check that the logs are being filled out and the MicroPEM is being worn.
2. Remind the participant of the Health Measures Visit and the appropriate timeframes needed for medication usage and/or smoking.

HEALTH MEASURES AND SAMPLING PICK UP VISIT

Note: The “Health Measures and Sampling Pick Up Visit” occurs 48 hours from “Sampling Set Up.” These visits are completed 2x per winter. Complete the “**Health Measures and Sampling Pick Up Checklist**” as you progress through the following tasks.

Complete the “**Health Measures and Sampling Pick Up Checklist**” as you progress through the following tasks.

1. **At the end of the 48 hours**, return to the home to complete the Health Measures.
 - a. Explain the health measures that will be collected.
 - b. Complete the “**Lung Function Screening Questionnaire**” via interview.

- i. Note that spirometry is medication and health dependent. Based on the results of the **“Lung Function Screening Questionnaire,”** determine if spirometry needs to be rescheduled (when possible).
- c. Complete the health measures and the **“Health Measures Visit Sheet.”**
 - i. Pulse Oximeter - Saturated oxygen and heart rate (see “Pulse Oximeter Protocol” and “Referral Protocol for Health Measure Readings.”)
 - ii. Blood Pressure (see “e-sphyg 2 BP Cuff Protocol” and “Referral Protocol for Health Measure Readings.”)
 - iii. Demonstrate how to use the spirometer and complete Spirometry testing.
 1. Give breaks between efforts when needed.
 - iv. Referral Section – notify PI (Curtis Noonan (406) 243-4957, curtis.noonan@umontana.edu or Tony Ward (406) 243-4092, tony.ward@umontana.edu) of any Urgent or Emergent referrals.
- d. Complete the **“Additional Health Questions for Each Visit”** questionnaire via interview.
2. Complete the appropriate sections of the equipment data sheets.
 - a. **“DustTrak Data Sheet”**
 - b. **“Humidity Monitor Data Sheet”**
 - c. **“MicroPEM Data Sheet”**
3. Collect the sampling equipment and household binder.
 - a. MicroPEM, FitBit, and MicroPEM holder
 - b. DustTrak and case
 - c. Humidity Monitor
 - d. Binder and completed logs (review to ensure completeness).
 - i. **“Home Activity Log”**
 - ii. **“Wood Stove Usage Log”**
 - iii. **“In-Home Log”** (how often they’re in their house)
4. Download the iButton data and complete the appropriate sections of the **“iButton Data Sheet.”** Note: the same “iButton Data Sheet” will be used at all visits.
 - a. If using a PC to download the iButton, restart the mission with the software. Check to make sure that next to “Is Mission Active?” it says “true,” the “sampling rate” is equal to 25 minutes,” and next to “roll over enabled?” it says “true.”
5. IF FIRST WINTER VISIT, schedule the next “Sampling Set Up Visit” when possible (minimum 3 weeks out; however more time in between visits is preferred when possible).
6. IF SECOND WINTER VISIT, collect iButton after download.
7. IF SECOND WINTER VISIT, collect a nicotine wipe sample (see “Nicotine Wipe Protocol”) and complete the appropriate sections of the **“Nicotine Wipe Data Sheet.”**
8. Provide the participant reimbursement to the household (\$50 for each health measures visit).

EldersAIR Database:

1. From the dashboard, select “View All Homes.”
2. Select the appropriate Home ID from the list.
3. Under the “SCHEDULE” section, select “Pickup/Health Measures 1” (or “Pickup/Health Measures 2”) from the list.

4. Enter the “Actual Date” and “Actual Time.”
5. Click “Save.”
6. Next, enter the appropriate forms for the household.
 - a. **iButton Update:** Under the “VISIT 1 FORMS” (or “VISIT 2 FORMS”) section of the home page, select “iButton Update” with the appropriate visit date listed next to it. Enter the fields using the “iButton Data Sheet” and select “Save.”
 - b. **DustTrak:** Under the “VISIT 1 FORMS” (or “VISIT 2 FORMS”) section of the home page, select “DustTrak” from the list. Enter the fields using the “DustTrak” datasheet and upload the TrackPro file. Select “Save.”
 - c. **Home Activity Log:** Under the “VISIT 1 FORMS” (or “VISIT 2 FORMS”) section of the home page, select “Home Activity – Day 1” from the list. Enter the fields using the appropriate “Home Activity Log” form and select “Save.” Repeat for Days 2-3.
 - d. **MicroPEM:** Under the “VISIT 1 FORMS” (or “VISIT 2 FORMS”) section of the home page, select “MicroPEM” from the list. Enter the fields using the “MicroPEM” datasheet and upload the MicroPEM and FitBit files. Select “Save.”
 - e. **Humidity:** Under the “VISIT 1 FORMS” (or “VISIT 2 FORMS”) section of the home page, select “Humidity” from the list. Enter the fields using the appropriate “Humidity Tracking” form and select “Save.”
 - f. **Wood Stove Usage:** Under the “VISIT 1 FORMS” (or “VISIT 2 FORMS”) section of the home page, select “Woodstove Usage” from the list. Enter the fields using the appropriate “Wood Stove Usage Log” and select “Save.”
 - g. **Nicotine (2nd Visit ONLY):** Under the “VISIT 2 FORMS” section of the home page, select “Nicotine” from the list. Enter the fields using the “Nicotine Wipe Data Sheet” and select “Save.”
7. Next, enter the appropriate forms for each Elder.
 - a. Select the appropriate Elder ID under the “Elders” section of the home.
 - b. **In Home Log:** Under the “VISIT 1 FORMS” (or “VISIT 2 FORMS”) section of the Elder’s page, select “In Home Log – Day 1.” Enter the fields using the appropriate “In Home Log” form and select “Save.” Repeat for Days 2-3.
 - c. **Lung Function Screening Questionnaire:** Under the “VISIT 1 FORMS” (or “VISIT 2 FORMS”) section of the home page, select “Lung Function” from the list. Enter the fields using the appropriate “Lung Function Screening Questionnaire” form and select “Save.”
 - d. **Health Measures:** Under the “VISIT 1 FORMS” (or “VISIT 2 FORMS”) section of the home page, select “Health Measures” from the list. Enter the fields using the “Health Measures Visit” datasheet and upload the Spirometry file. Select “Save.” Note: If you were unable to complete the Spirometry, be sure to select “Yes” for “Spiro Failed.” This will trigger the need for a Spiro Repeat.
 - e. **Additional Health Questions for Each Visit:** Under the “VISIT 1 FORMS” (or “VISIT 2 FORMS”) section of the home page, select “Extra Health Questions” from the list. Enter the fields using the appropriate “Additional Health Questions for Each Visit” form and select “Save.”
 - f. Repeat steps “a” through “e” for each participating Elder.
8. IF 1ST WINTER VISIT AND you scheduled the next “Sampling Set Up Visit,” return to the Home’s main page in the database by selecting “Show Home” at the top of the Elder’s page.
9. Under the “SCHEDULE” section, select “Sampling Visit 2” from the list.

10. Enter the "Appointment Date" and "Appointment Time."
11. Click "Save."

RESCHEDULING A FAILED SPIROMETRY TEST

When a participant cannot complete the Spirometry measures or Dr. Paul Smith indicates that the Spirometry measures are invalid and need to be redone, a follow up Spirometry visit will be scheduled (when possible).

1. Call the participant to review the health measures that will be completed.
 - a. Complete the **"Scheduling Spirometry"** questions via interview.
 - b. Explain any scheduling delays that will need to occur to account for medication usage and/or smoking.
 - c. Schedule a time for the health measures when the appropriate time between use of medications and/or smoking will have the least impact.
2. Return to the home to complete the Health Measures.
 - a. Explain the health measures that will be collected.
 - b. Complete the **"Lung Function Screening Questionnaire"** via interview.
 - i. Note that spirometry is medication and health dependent. Based on the results of the **"Lung Function Screening Questionnaire,"** determine if spirometry needs to be rescheduled (when possible).
 - c. Complete the health measures and the **"Health Measures Visit Sheet."**
 - i. Pulse Oximeter - Saturated oxygen and heart rate.
 - ii. Blood Pressure.
 - iii. Demonstrate how to use the spirometer and complete Spirometry testing.
 1. Give breaks between efforts when needed.
 - iv. Referral Section – notify PI (Curtis Noonan (406) 243-4957, curtis.noonan@umontana.edu or Tony Ward (406) 243-4092, tony.ward@umontana.edu) of any Urgent or Emergent referrals.

EldersAIR Database:

1. When you enter a "YES" for "Failed Spiro" in the "Health Measures" form, the system will show either "Spiro Visit 1" or "Spiro Visit 2" (depending if it occurred during visit 1 or visit 2) under the Elder's SCHEDULE section.
2. Under the "SCHEDULE" section of the Elder's page, select either "Spiro Visit 1" or "Spiro Visit 2."
3. Enter the "Appointment Date" and "Appointment Time" and click "Save."
4. Once the visit occurs, select either "Spiro Visit 1" or "Spiro Visit 2" under the Elder's "SCHEDULE" section.
5. Enter the "Actual Date" and "Actual Time" and click "Save."
6. New "Extra Health Questions," "Health Measures," "Lung Function," and "Spiro Scheduling" forms will now show up under the "SPIRO 1 (OR 2) REDO FORMS" section.
7. Open the forms, enter the applicable fields, and select "save" when finished.

Elders Home Visit Protocol – Winter 2

CONTACT HOUSEHOLD FOR BEGINNING OF WINTER 2

When it is time to begin scheduling households for winter 2, contact each household:

1. Explain that you are calling to schedule the initial (intervention) visit for the EldersAIR study and what it will include (explain for assigned treatment – filtration (TX1, TX2) or best burn education (TX3)):
 - a. **Filtration (TX1 or TX2):** Set up air filtration unit (Filter Unit) and complete paperwork. This visit will take approximately 30 minutes (schedule 1 hour).
 - b. **Best Burn Education (TX3):** Administer KAB Education form first. Display within home the three short videos for review during the appointment. At the visit, you will discuss the videos, review best burn techniques, and demonstrate the use of the moisture meter, fire starter, and thermometer. You will then complete the initial paperwork. The visit should take approximately 30 minutes to 1 hour (schedule 1 hour).
2. Provide options for dates and times for the Sampling Set Up visit.
3. Finalize a date and time with the participant.
4. Let the participant know you will call, text or email the day before the appointment with a reminder. Ask for preferred reminder method – call, text, or email.

EldersAIR Database:

Prior to the beginning of Year 2, UM will assign each household's condition in the database. **NOTE: It is important not to enter any additional data until the home has been assigned an intervention in the database!**

1. From the dashboard, select "View All Homes."
2. Select the appropriate Home ID from the list.
3. Under the "SCHEDULE" section, select "Intervention" from the list.
4. Enter the "Appointment Date" and "Intervention Time."
5. Click "Save."

INTERVENTION VISIT

Note: Depending on the home assignment, complete either the "**Filter Intervention Visit**" or "**Education Intervention Visit**" checklist as you progress through the following tasks.

1. Provide the "**Demographics**" and "**Home Characteristic Data Sheet**" to the participant(s) to complete.
Note: A demographics form is needed for each participant.
2. Install the iButton on stove.
 - a. If their stove has legs, attach the iButton's ball-chain around the upper, back, right leg and secure.
 - b. If it is a pedestal stove (or as needed), attach the button to the lower, right, backside of stove via magnet.

- c. Note the iButton's location should be comfortably warm to the touch of the hand.
3. Complete the appropriate sections of the **"iButton Data Sheet."**
4. Provide the **"Study Contact Information"** to the participant(s) and let them know they can contact you at anytime with questions.
5. **Filter Intervention:**
 - a. Locate an available outlet and space where the Filter unit can be located throughout the winter, where the participant spends the most amount of time. Note: The Filter unit for placebo (T2) homes will need to be taped closed prior to the visit so it is not possible to see into the filter compartment. Non-placebo units can also be taped (less extensively) to keep houses similar if they were to speak to each other. Winix brand filters also need the Air Quality Sensor lights taped over. Use black tape first, then cover with white.
 - b. Install the KW (Kill-a-watt) meter and filter (see "Filter Unit Protocol"), and complete the **"Filter Unit Tracking Form."**
 - c. Turn the Tx1 Filter Unit on the "high" setting and the TX2 (placebo) Filter Unit unit on the "low" setting.
 - d. Instruct the participant on the filter change lights (i.e., notify if they see a yellow or red light on the front of the Winix unit).
6. **Education Intervention:**
 - a. Complete the KAB Education form before starting the rest of the education visit.
 - b. Watch the videos with the participant in their home.
 - c. Review and complete the **"Best Burn Education Tracking Form"** as you progress through the best burn education training with the homeowner.
 - d. Provide the moisture meter, wood stove thermometer, and fire starters to the homeowner and demonstrate how each tool is used.
 - e. Provide a copy of the **"Wood Stove Best Burn Summary"** and the EldersAIR videos (3) to the homeowner.
7. Schedule the Sampling Set Up Visit (minimum 2 weeks after intervention visit).
 - a. Complete the scheduling section of the **"Education Intervention Visit"** checklist by first asking if the participant(s) have had a respiratory tract infection in the last three weeks. If "YES," the Sampling Set Up Visit will need to be delayed accordingly (when possible).

EldersAIR Database:

1. From the dashboard, select "View All Homes."
2. Select the appropriate Home ID from the list.
3. Under the "SCHEDULE" section, select "Intervention" from the list.
4. Enter the "Actual Date" and "Actual Time" and click "Save."
5. Next, enter the appropriate forms for the household.
 - a. **Home Characteristics:** Under the "FORMS" section of the home page, select "Home Characteristics" from the list. Enter the fields using the "Home Characteristics" form and select "Save."
 - b. **iButton:** Under the "FORMS" section of the home page, select "iButton" from the list. Enter the fields using the "iButton Data Sheet" and select "Save."

Filter Homes ONLY:

- a. **Filter Unit:** Under the “FORMS” section of the home page, select “Filter Unit” from the list. Enter the fields using the “Filter Unit Tracking” form and select “Save.”

Education Homes ONLY:

- a. **Best Burn Education Tracking:** Under the “FORMS” section of the home page, select “Education” from the list. Enter the fields using the “Best Burn Education Tracking” form and select “Save.”
6. Next, enter the appropriate forms for each Elder.
 - a. Select the appropriate Elder ID under the “ELDERS” section of the home.
 - b. **Demographics:** Under the “FORMS” section of the Elder’s page, select “Demographics” from the list. Enter the fields using the “Demographics” form and select “Save.”
 - c. Repeat steps “a” and “b” for each participating Elder.
7. If you scheduled the Sampling Set Up Visit, return to the Home’s main page by selecting “Show Home” at the top of the Elder’s page.
8. Under the “SCHEDULE” section, select “Sampling Visit 1” (or “Sampling Visit 2”) from the list.
9. Enter the “Appointment Date” and “Appointment Time.”
10. Click “Save.”

SAMPLING SET UP VISIT

Sampling is completed 2x per winter. The 1st sampling visit should occur a minimum of 2 weeks after the intervention. When possible, the 2nd sampling visit should occur a minimum of 3 weeks after the 1st sampling visit.

Note: Complete the “**Sampling Set Up Checklist**” as you progress through the following tasks.

1. Find a place across the room from the stove to place the DustTrak (See “DustTrak Protocol” for programming the equipment prior to the visit).
 - a. If they already have a table or surface to use, go for it, if not, set up the tv-tray where it won’t easily be knocked over by people or pets.
 - b. The DustTrak needs to be plugged in to a working wall outlet.
 - c. Turn the DustTrak on and start the program.
 - d. Attach the Humidity Monitor to the DustTrak.
 - e. Complete the appropriate sections of the “**DustTrak Data Sheet**” and “**Humidity Monitor Data Sheet.**”
2. Introduce the MicroPEM and holder.
 - a. Clip the FitBit Zip to the MicroPEM pouch (see FitBit Zip Activity Monitor Protocol).
 - b. Describe how to wear it.
 - c. Inform them of when to wear it.
 - d. Inform them that you will be calling to check in on the MicroPEM in 24 hours.
 - e. Complete the appropriate sections of the “**MicroPEM Data Sheet.**”
3. Sit down with the participant to go through the white binder contents.

- a. Describe how to fill out all the forms over the next 48 hours.
 - i. **“Home Activity Log”**
 - ii. **“Wood Stove Usage Log”**
 - iii. **“In-Home Log”** (how often they’re in their house)
4. Download the iButton data and complete the appropriate sections of the **“iButton Data Sheet.”** Note: the same “iButton Data Sheet” will be used at all visits.
 - a. If using a PC to download the iButton, restart the mission with the software. Check to make sure that next to “Is Mission Active?” it says “true,” the “sampling rate” is equal to 25 minutes,” and next to “roll over enabled?” it says “true.”
5. **FILTER HOMES ONLY**
 - a. Record the KW meter reading and check the filter replacement light on Winix units to see if a filter change is required. Note: Placebo homes (TX2) do not require a filter or filter change.
 - i. Verify that the active Filter unit is running on the “High” setting. If not, turn it up to the High setting.
 - b. Complete the **“Filter Unit Tracking Form.”** Note: the same “Filter Unit Tracking Form” will be used at all visits.
6. **Education Homes ONLY:**
 - a. At each sampling set up visit, education homes will be asked about the top three best burn items that were identified during the intervention visit – one question per visit. Record the question/participant answer on the **“Sampling Set Up”** checklist (see bottom section).
7. Ask if you can trade a piece of wood so you can test the moisture content. Label the piece of wood with the home ID.
8. Review the health measures that will be completed in two days.
 - a. Complete the **“Scheduling Spirometry”** questions via interview. See also “Scheduling Spirometry Protocol.”
 - b. Explain any scheduling delays that will need to occur to account for medication usage and/or smoking.
 - c. Schedule a time for the health measures when the appropriate time between use of medications and/or smoking will have the least impact.
9. **1st Winter Visit ONLY (Year 2): After the visit/at the office,** split the piece of wood obtained from the homeowner and complete the **“Wood Moisture Tracking Form.”** It is important to take the moisture reading from the inside of the wood to provide the most accurate measurement.

EldersAIR Database:

1. From the dashboard, select “View All Homes.”
2. Select the appropriate Home ID from the list.
3. Under the “SCHEDULE” section, select “Sampling Visit 1” (or “Sampling Visit 2” if second visit) from the list.
4. Enter the “Appointment Date” and “Appointment Time.”
5. Click “Save.”
6. Next, enter the appropriate forms for the household.

- a. **iButton:** Under the “VISIT 1 FORMS” (or “Visit 2 Forms”) section of the home page, select “iButton Update” with the appropriate visit date listed next to it. Enter the fields using the “iButton Data Sheet” and select “Save.”
- b. **Wood Moisture:** Under the “FORMS” section of the home page, select “Moisture” from the list. Enter the fields using the “Wood Moisture Tracking” form and select “Save.”

Filter Homes ONLY:

- c. **Filter Unit:** Under the “VISIT 1 FORMS” (or “Visit 2 Forms”) section of the home page, select “Filter Unit Update” with the appropriate visit date listed next to it. Enter the fields using the “Filter Unit Tracking” form and select “Save.”

Education Homes ONLY:

- d. **Ed Check:** Under the “VISIT 1 FORMS” (or “Visit 2 Forms”) section of the home page, select “Ed Check” with the appropriate visit date listed next to it. Select the question that was asked from the drop down menu and enter the response from the household in the “Answer” field. Select “Save.”
7. Next, enter the appropriate forms for each Elder.
 - a. Select the appropriate Elder ID under the “ELDER” section of the home.
 - b. **Scheduling Spirometry:** Under the “VISIT 1 FORMS” (or “Visit 2 Forms”) section of the Elder’s page, select “Scheduling Spiro.” The Scheduling Spiro form should list the date that corresponds with your visit next to it. Enter the fields using the “Scheduling Spirometry” form and select “Save.”
 - c. Repeat steps “a” and “b” for each participating Elder.
 8. Return to the Home’s main page within the database by selecting “Show Home” at the top of the Elder’s page.
 9. Enter the “Sampling Pick Up & Health Measures Visit” appointment.
 - a. Under the “SCHEDULE” section, select “Pickup/Health Measures 1” (or “Pickup/Health Measures 2”) from the list.
 - b. Enter the “Appointment Date” and “Appointment Time.”
 - c. Click “Save.”

SAMPLING CHECK IN CALL

1. **After 24 hours**, call the participant(s) to check that the logs are being filled out and the MicroPEM is being worn.
2. Remind the participant of the Health Measures Visit and the appropriate timeframes needed for medication usage and/or smoking.

HEALTH MEASURES AND SAMPLING PICK UP VISIT

Note: The “Health Measures and Sampling Pick Up Visit” occurs 48 hours from “Sampling Set Up.” These visits are completed 2x per winter. Complete the “**Health Measures and Sampling Pick Up Checklist**” as you progress through the following tasks.

1. **At the end of the 48 hours**, return to the home to complete the Health Measures.
 - a. Explain the health measures that will be collected.
 - b. Complete the **“Lung Function Screening Questionnaire”** via interview.
 - i. Note that spirometry is medication and health dependent. Based on the results of the **“Lung Function Screening Questionnaire,”** determine if spirometry needs to be rescheduled (when possible).
 - c. Complete the health measures and the **“Health Measures Visit Sheet.”**
 - i. Pulse Oximeter - Saturated oxygen and heart rate (see “Pulse Oximeter Protocol” and “Referral Protocol for Health Measure Readings.”)
 - ii. Blood Pressure (see “e-sphyg 2 BP Cuff Protocol” and “Referral Protocol for Health Measure Readings.”)
 - iii. Demonstrate how to use the spirometer and complete Spirometry testing.
 1. Give breaks between efforts when needed.
 - iv. Referral Section – notify PI (Curtis Noonan (406) 243-4957, curtis.noonan@umontana.edu or Tony Ward (406) 243-4092, tony.ward@umontana.edu) of any Urgent or Emergent referrals.
 - d. Complete the **“Additional Health Questions for Each Visit”** questionnaire via interview.
2. Complete the appropriate sections of the equipment data sheets.
 - a. **“DustTrak Data Sheet”**
 - b. **“Humidity Monitor Data Sheet”**
 - c. **“MicroPEM Data Sheet”**
3. Collect the sampling equipment and household binder.
 - a. MicroPEM, FitBit, and MicroPEM holder
 - b. DustTrak and case
 - c. Humidity Monitor
 - d. Binder and completed logs (review to ensure completeness).
 - i. **“Home Activity Log”**
 - ii. **“Wood Stove Usage Log”**
 - iii. **“In-Home Log”** (how often they’re in their house)
4. Download the iButton data and complete the appropriate sections of the **“iButton Data Sheet.”** Note: the same “iButton Data Sheet” will be used at all visits.
 - a. If using a PC to download the iButton, restart the mission with the software. Check to make sure that next to “Is Mission Active?” it says “true,” the “sampling rate” is equal to 25 minutes,” and next to “roll over enabled?” it says “true.”
5. **FILTER HOMES ONLY**
 - a. Record the KW meter reading.
 - i. Verify that the Filter is running on the “High” setting. If not, turn it up to the High setting.
 - b. Complete the **“Filter Unit Tracking Form.”** Note: the same “Filter Unit Tracking Form” will be used at all visits.
6. IF FIRST WINTER VISIT (Year 2), schedule the next “Sampling Set Up Visit” when possible (minimum 3 weeks out; however more time in between visits is preferred when possible).
7. Provide the participant reimbursement to the household (\$50 for each health measures visit).

SECOND WINTER VISIT ONLY (i.e., Last visit in Year 2)

8. Provide the **“KAB Post Winter 2 Survey”** and **“Post Winter Questionnaire”** to the household participant(s) to complete. Note: Use the correct version for Education and Filter homes.
9. Collect iButton after download.
10. Remove Placebo Filters and KW Meters/Surge Protectors.
11. Collect a nicotine wipe sample (see **“Nicotine Wipe Protocol”**) and complete the appropriate sections of the **“Nicotine Wipe Data Sheet.”**
12. Provide tools not originally received (moisture meter, firestarters, thermometer, and new filter Filter Unit homes and an active Filter unit for the education homes).
13. **FILTER HOMES ONLY:** Provide the filter reimbursement to the household.

EldersAIR Database:

1. From the dashboard, select **“View All Homes.”**
2. Select the appropriate Home ID from the list.
3. Under the **“SCHEDULE”** section, select **“Pickup/Health Measures 1”** (or **“Pickup/Health Measures 2”**) from the list.
4. Enter the **“Actual Date”** and **“Actual Time.”**
5. Click **“Save.”**
6. Next, enter the appropriate forms for the household.
 - a. **iButton Update:** Under the **“VISIT1 FORMS”** (or **“VISIT 2 FORMS”**) section of the home page, select **“iButton Update”** with the appropriate visit date listed next to it. Enter the fields using the **“iButton Data Sheet”** and select **“Save.”**
 - b. **DustTrak:** Under the **“VISIT1 FORMS”** (or **“VISIT 2 FORMS”**) section of the home page, select **“DustTrak”** from the list. Enter the fields using the **“DustTrak”** datasheet and upload the TrackPro file. Select **“Save.”**
 - c. **Home Activity Log:** Under the **“VISIT1 FORMS”** (or **“VISIT 2 FORMS”**) section of the home page, select **“Home Activity – Day 1”** from the list. Enter the fields using the appropriate **“Home Activity Log”** form and select **“Save.”** Repeat for Days 2-6.
 - d. **MicroPEM:** Under the **“VISIT1 FORMS”** (or **“VISIT 2 FORMS”**) section of the home page, select **“MicroPEM”** from the list. Enter the fields using the **“MicroPEM”** datasheet and upload the MicroPEM and FitBit files. Select **“Save.”**
 - e. **Humidity:** Under the **“VISIT1 FORMS”** (or **“VISIT 2 FORMS”**) section of the home page, select **“Humidity”** from the list. Enter the fields using the appropriate **“Humidity Tracking”** form and select **“Save.”**
 - f. **Wood Stove Usage:** Under the **“VISIT1 FORMS”** (or **“VISIT 2 FORMS”**) section of the home page, select **“Woodstove Usage”** from the list. Enter the fields using the appropriate **“Wood Stove Usage Log”** and select **“Save.”**
 - g. **End of Winter (Post Winter Questionnaire) (2nd/Final Visit ONLY):** Under the **“VISIT 2 FORMS”** section of the home page, select **“EOW”** from the list. Enter the fields using either the **“Post Winter Questionnaire Filter Homes”** or **“Post Winter Questionnaire Education Homes”** survey.
 - h. **Post Winter KAB Assessment (2nd/Final Visit ONLY):** Under the **“VISIT 2 FORMS”** section of the home page, select **“KAB”** from the list. Enter the fields using the **“KAB Filter Homes Post Winter 2 Assessment”** or the **“KAB Educational Homes Post Winter 2 Assessment.”**

- i. **Nicotine (2nd/Final Visit ONLY):** Under the “VISIT 2 FORMS” section of the home page, select “Nicotine” from the list. Enter the fields using the “Nicotine Wipe Data Sheet” and select “Save.”

Filter Homes ONLY:

- j. **Filter Unit:** Under the “VISIT1 FORMS” (or “VISIT 2 FORMS”) section of the home page, select “Filter Unit Update” with the appropriate visit date listed next to it. Enter the fields using the “Filter Unit Tracking” form and select “Save.”
7. Next, enter the appropriate forms for each Elder.
 - a. Select the appropriate Elder ID under the “Elders” section of the home.
 - b. **In Home Log:** Under the “VISIT1 FORMS” (or “VISIT 2 FORMS”) section of the Elder’s page, select “In Home Log – Day 1.” Enter the fields using the appropriate “In Home Log” form and select “Save.” Repeat for Days 2-6.
 - c. **Lung Function Screening Questionnaire:** Under the “VISIT1 FORMS” (or “VISIT 2 FORMS”) section of the home page, select “Lung Function” from the list. Enter the fields using the appropriate “Lung Function Screening Questionnaire” form and select “Save.”
 - d. **Health Measures:** Under the “VISIT1 FORMS” (or “VISIT 2 FORMS”) section of the home page, select “Health Measures” from the list. Enter the fields using the “Health Measures Visit” datasheet and upload the Spirometry files. Select “Save.”
 - e. **Additional Health Questions for Each Visit:** Under the “VISIT1 FORMS” (or “VISIT 2 FORMS”) section of the home page, select “Additional Health” from the list. Enter the fields using the appropriate “Additional Health Questions for Each Visit” form and select “Save.”
 - f. Repeat steps “a” through “e” for each participating Elder.
8. IF 1ST WINTER VISIT AND you scheduled the next “Sampling Set Up Visit,” return to the Home in the database by selecting “Show Home” at the top of the Elder’s page.
9. Under the “SCHEDULE” section, select “Sampling Visit 2” from the list.
10. Enter the “Appointment Date” and “Appointment Time.”
11. Click “Save.”

RESCHEDULING A FAILED SPIROMETRY TEST

When a participant cannot complete the Spirometry measures or Dr. Paul Smith indicates that the Spirometry measures are invalid and need to be redone, a follow up Spirometry visit will be scheduled (when possible).

1. Call the participant to review the health measures that will be completed.
 - a. Complete the “**Scheduling Spirometry**” questions via interview.
 - b. Explain any scheduling delays that will need to occur to account for medication usage and/or smoking.
 - c. Schedule a time for the health measures when the appropriate time between use of medications and/or smoking will have the least impact.
2. Return to the home to complete the Health Measures.
 - a. Explain the health measures that will be collected.
 - b. Complete the “**Lung Function Screening Questionnaire**” via interview.

- i. Note that spirometry is medication and health dependent. Based on the results of the **“Lung Function Screening Questionnaire,”** determine if spirometry needs to be rescheduled (when possible).
- c. Complete the health measures and the **“Health Measures Visit Sheet.”**
 - i. Pulse Oximeter - Saturated oxygen and heart rate.
 - ii. Blood Pressure.
 - iii. Demonstrate how to use the spirometer and complete Spirometry testing.
 - 1. Give breaks between efforts when needed.
 - iv. Referral Section – notify PI (Curtis Noonan (406) 243-4957, curtis.noonan@umontana.edu or Tony Ward (406) 243-4092, tony.ward@umontana.edu) of any Urgent or Emergent referrals.

EldersAIR Database:

1. When you enter a “YES” for “Failed Spiro” in the “Health Measures” form, the system will show either “Spiro Visit 1” or “Spiro Visit 2” (depending if it occurred during visit 1 or visit 2) under the Elder’s SCHEDULE section.
2. Under the “SCHEDULE” section of the Elder’s page, select either “Spiro Visit 1” or “Spiro Visit 2.”
3. Enter the “Appointment Date” and “Appointment Time” and click “Save.”
4. Once the visit occurs, select either “Spiro Visit 1” or “Spiro Visit 2” under the Elder’s “SCHEDULE” section.
5. Enter the “Actual Date” and “Actual Time” and click “Save.”
6. New “Extra Health Questions,” “Health Measures,” “Lung Function,” and “Sprio Scheduling” forms will now show up under the “SPIRO 1 (OR 2) REDO FORMS” section.
7. Open the forms, enter the applicable fields, and select “save” when finished.

Health Measures and Sampling Visit: Elders study

At entry (or first home visit) the following will be collected from each participant:

- Signed Informed Consent (if not already collected)
- Signed HIPAA Form (if not already collected)
- Demographics Form
- Health History Form
- Home Characteristics Form

At each of two visits per winter the following measures will be collected:

- Saturated oxygen and heart rate (see Pulse Oximeter Protocol)
- Blood Pressure (see e-sphyg 2 BP Cuff Protocol, see also Referral Protocol)
- Spirometry (see Questionnaire and Spirometry Protocol, including ‘Additional Questions for each Health Visit’)

At each visit, the following exposure assessment procedures will occur:

- DustTrack sampling (48 hour)
- MicroPEM personal sampler (48 hour)

The DustTrak air sampling equipment will be placed by study personnel and will measure temperature and dust for 48 hours. The home participants will also be asked to wear a small device (MicroPEM personal sampler) that will measure the amount of wood smoke particles that they breathe. The device is about the size of a deck of cards. Participants will be asked to wear the device while they are awake during the 48 hour sampling period.

During air sampling, the following data collection forms will be completed by a home resident:

- Home activity log
- In-home log
- Wood stove tracking form
- Wood stove usage form

During one visit per winter, a nicotine wipe sample will be collected from the home by field personnel.

- Nicotine Protocol
- Nicotine Wipe Data Sheet

Demographic Questions for Resident

Home ID: _____

Date: _____

1. Please circle one: Female Male

2. What is your age as of Nov 1? _____

3. Are you Hispanic or Latino?

Yes

No

4. What is your race? Circle one or more races to indicate what you consider yourself to be:

American Indian/Alaskan Native

Asian

Native Hawaiian or Other Pacific Islander

Black or African American

White

More than one race

5. Circle the category that best describes your household income?

Less than \$20,000

\$20,000 to \$29,999

\$30,000 to \$39,999

\$40,000 to \$49,999

\$50,000 to \$74,999

\$75,000 to \$99,999

\$100,000 or more

6. Circle the category that best describes your years of school completed:

Less than high school

High school diploma or GED

Some college

College degree

7. How many total residents are in your home? _____

8. How many children under 18 reside in your home? _____

Health History

Page 1

We are interested in knowing whether or not you have been told and/or diagnosed by a medical health provider with any of the following conditions. You are unlikely to recognize the names of any or all of these conditions unless you've been told you have them. Have you ever been told by a doctor or other health care professional that you have any of the following conditions?

	YES	NO	Not Sure	Refused	Date Diagnosed
a. Rheumatoid Arthritis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b. Lupus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c. Scleroderma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d. Psoriasis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
e. Asthma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
f. Eczema	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
g. Emphysema	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
h. Chronic bronchitis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
i. Chronic Obstructive Pulmonary Disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
j. Sarcoidosis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
k. Hayfever	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
l. Allergies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

If you have been diagnosed with Allergies, what are you allergic to? _____

Have you been diagnosed with any other autoimmune disease: ☐ YES ☐ NO ☐ Not Sure ☐ Refused _____

If so, what was the diagnosis?

Health History

Page 2

Participant ID: _____

CONTINUED

	YES	NO	Not Sure	Refused	Date Diagnosed
m. GERD (acid reflux)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
n. Chrohns Disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
o. Colitis (bloody, mucus stools)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
p. Sleep Apnea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
q. Kidney failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
r. Pleural Effusion (fluid in chest/lung)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
s. Pleurisy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
t. Pneumonia (diagnosed by MD)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
u. Pneumothrorax (lung collapse)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
v. Empyema (collection of pus in the space between the lung and the inside of the chest wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
w. Broken or cracked ribs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
x. Coronary artery disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
y. Angina	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
z. Heart Attack	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
aa. Congestive heart failure (CHF)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
bb. Abnormal heart rhythm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
cc. Pacemaker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
dd. ICD (intraventricular cardiac defibrillator)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
ee. Valve disease/heart murmur	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
ff. Hypertension (high blood pressure)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
gg. Circulation problems in legs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
hh. Circulation problems in head/neck (Carotids)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Health History

Page 3

	YES	NO	Not Sure	Refused	Date Diagnosed
ii. Stroke	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
jj. Diabetes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
kk. Thyroid Disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
ll. Anemia (low blood count)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Have you been diagnosed with cancer? ☐ ☐ ☐ ☐ _____

For each different type of cancer diagnosed, please select the corresponding code from the list below and write it in one of the boxes below.

Cancer 1 _____	Cancer 6 _____	Cancer 11 _____
Cancer 2 _____	Cancer 7 _____	Cancer 12 _____
Cancer 3 _____	Cancer 8 _____	
Cancer 4 _____	Cancer 9 _____	
Cancer 5 _____	Cancer 10 _____	

Code	Location	Code	Location	Code	Location
10	Bladder	24	Melanoma	35	Stomach
11	Blood	25	Lymphoma/Hodgkin's Disease	36	Testis (Testicular)
12	Bone	42	Mesothelioma	37	Thyroid
13	Brain	26	Mouth/Tongue/lip	38	Uterus (Uterine)
14	Breast	41	Nasal/sinus	39	Other
15	Cervix (Cervical)	27	Nervous System	77	Refused
16	Colon	28	Ovary (Ovarian)	99	Don't Know
17	Esophagus (Esophageal)	29	Pancreas (Pancreatic)		
18	Gallbladder	40	Pharyngeal/throat		
19	Kidney	30	Prostate		
20	Larynx/Voice Box	31	Rectum (Rectal)		
21	Leukemia	32	Skin (non-melanoma)		
22	Liver	33	Skin (don't know what kind)		
23	Lung	34	Soft Tissue (muscle or fat)		

HOME CHARACTERISTICS DATA SHEET

Technician: _____ Home ID: _____ Winter (1,2,3,etc.): _____

Sampling Dates: _____ Date form completed: _____

To be completed by resident once at the beginning of each winter.

1. Number of total residents in home: _____
2. Number of residents over 55 years of age: _____
3. Type of home: House Mobile Home Duplex/Apt Other: _____
4. Year home built: _____
5. Square footage of home: _____
6. Number of floors (not incl. bsmnt): 1 2 3
7. Number of windows: _____
8. Number of bedrooms: _____
9. Total number of pets: _____
10. Total number of "furry" pets: _____
11. Type of primary heating (Please circle ONLY one choice that represents your most common practice):
Wood stove Electrical Propane Natural gas furnace Oil Other: _____
12. Type of secondary heating (Please circle ONLY one choice that represents your most common practice):
Wood stove Electrical Propane Natural gas furnace Oil None or Other: _____
13. Existing appliance(s): Fireplace Wood stove Furnace Wood stove insert
14. Wood stove model (If you have access, information is located on the back of the stove):
15. Approximately how old is your wood stove:
0-5 years old 6-10 years old 11-15 years old 16 + years old
16. Is your wood stove EPA-certified? Yes No I don't know
17. When do you get your wood before burning? (Please circle ONLY one choice that represents your most common practice)
A few days Between 1 week and 1 month

Between 1 month and 3 months

Between 3 months and 6 months

Between 6 months and 1 year

More than 1 year

18. On average, how many cords of wood do you burn each year? _____ cords

19. How do you usually acquire your wood? (Please circle ONLY one choice that represents your most common practice)

Senior Wood Delivery Program Harvest yourself Purchase it Other: _____

20. When was the last time you had your chimney cleaned?

Less than 6 months ago 6-12 months ago 12-18 months ago more than 18 months ago

21. Within the last 12 months have you had wet or damp spots on surfaces inside your home other than in the basement (for example on walls, wall paper, ceilings or carpets)?

Yes No I don't know

22. Has there been mold or mildew on any surfaces inside your home in the last 12 months?

Yes No I don't know

Pulse Oximeter Protocol

1. Remove blue Pulse Oximeter (pulse-ox) from blue carrying case.
2. Squeeze the end of the pulse-ox that says PUSH to open the clip.
3. Place the participant's index or thumb into the clip and release the pulse-ox so it gently squeezes the finger.
 - a. The fingernail should be facing up, toward the display.
Don't put the pulse-ox on upside down!
 - b. Make sure the participant is not moving and is at ease during this process.
4. Press the white button on the top and it will turn on and start to take a reading.
 - a. You'll notice red LED lights show up on the display.
 - b. The reading will take a few seconds before it shows up on the display.
 - c. Once it's ready, you will see two numbers:
 - i. The first number will appear about "PRbpm," which is your current Heart Rate
 - ii. The second number appears above "%SpO2," which is your oxygen percentage.
 - d. Wait at least 10 seconds after the first reading shows up before you record the numbers.
 - e. Write the two measurements down on the medical visit log form.
5. Gently press the PUSH end of the pulse-ox again to open the clip and release the finger.
6. The pulse-ox will turn off on its own.
7. Use an alcohol swab to gently clean the inside of the clip.
8. You can store it back in its blue carrying case.
9. If the low battery icon shows up on the display, you need to switch out the batteries.
 - a. Flip the pulse-ox over and slide off the blue battery cover.
 - b. Replace the two AAA batteries.
 - c. Replace the blue cover.



e-sphyg 2 Blood Pressure Protocol

1. Make sure your participant is comfortable and relaxed.
 - a. The participant should have been resting for at least 5 minutes prior to the test.
 - b. Make sure the participant does not move or talk during the test.
 - c. If you need to repeat a test, wait 5 minutes between tests.
2. Turn the device on by pressing the “I” side of the Main Power Switch.
3. Make sure the mode selector switch is down, set to AUTO.
4. Set the preset pressure value by turning the knob till the line is at 180.
5. Apply the BP cuff to the participant’s arm.
 - a. Choose the cuff that fits best (most likely Adult)
 - b. Wrap it around the upper arm, just above the bend of the elbow.
 - c. The Artery Mark should be lined up over the brachial artery.
6. Press the Start button.
 - a. The cuff will automatically start to inflate.
 - b. The meter will stop inflating when it reaches the correct pressure (which may be higher or lower than the pre-set 180 value)
 - c. The “heart” symbol will flash on the screen when the pulse is detected.
 - d. The cuff will automatically deflate.
 - i. **If the measurement needs to be interrupted, press the Stop button and the cuff will exhaust air rapidly**
7. The blood pressure and pulse rate will be displayed on the screen after the test is complete.
8. To check the status of the batteries, refer to the indicator light on the front of the meter. If you plug the unit into an AC outlet, and the light is yellow, the battery is charging. If the light is green, you can unplug it from the AC outlet because the battery is fully charged. The battery will charge whether the unit is on or off.
9. Turn off the instrument by pressing the “O” side of the Main Power Switch.

*Note: Measurements obtained in Auto mode are kept in the meter’s memory, **until the next measurement is taken**. To recall the result, press the “I” side of the Main Power Switch to turn the meter on, and make sure it is set to Auto. Press the Set/Memory button and the last result will be displayed.*

See the user manual for Error Displays and Troubleshooting, page 18.

Referral Protocol for Blood Pressure Readings

This chart below reflects blood pressure categories defined by the American Heart Association.

Blood Pressure Category	Systolic mm Hg (upper #)		Diastolic mm Hg (lower #)
Normal	less than 120	and	less than 80
Prehypertension	120 – 139	or	80 – 89
High Blood Pressure (Hypertension) Stage 1	140 – 159	or	90 – 99
High Blood Pressure (Hypertension) Stage 2	160 or higher	or	100 or higher
Hypertensive Crisis (Emergency care needed)	Higher than 180	or	Higher than 110

Field personnel will implement the following referral actions according to Blood Pressure Category and saturated oxygen (%SpO2) reading:

If Normal BP Category and %SpO2 > 95%: No referral action.

If Pre-hypertension BP Category OR %SpO2 is 90%-95%: Recommend that they discuss at their next visit with their primary care provider.

If Hypertension BP Category (Stage 1 or 2) OR %SpO2 is 80% to < 90%: Recommend follow up with primary care provider within next day

If (Hypertensive Crisis BP Category OR %SpO2 < 80%)
BUT participant is NOT experiencing any of the following symptoms:
chest pain, headaches, stroke like symptoms
THEN: Recommend follow up with primary care provider within next day

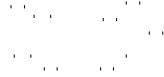
If (Hypertensive Crisis BP Category OR %SpO2 < 80%)
AND participant is experiencing any of the following symptoms:
chest pain, headaches, stroke like symptoms
THEN: Call for immediate assistance to 911 or local EMS

Questionnaire and Spirometry Protocol for: Residential Wood Smoke Interventions Improving Health in Native American Populations

Based on: THE EUROPEAN COMMUNITY RESPIRATORY HEALTH SURVEY II

LUNG FUNCTION TESTS

CRITERIA FOR TESTING



Criteria for baseline spirometry

The purpose of baseline spirometry is to record an accurate Forced Expiratory Volume in one second (FEV₁) and Forced Vital Capacity (FVC).

ACCEPTANCE CRITERIA:

Eligible participants must:

- Be a tribal member from one of the two study regions (i.e., Nez Perce or Navajo Reservation).
- Be an elder, age 55 years or older.
- Utilize a wood stove as the primary heating source.
- Be capable and willing to record symptom data and wood stove usage data, as well as complete pulmonary function testing (i.e., spirometry).

EXCLUSION CRITERIA:

If the participant smokes: Lung function testing should be carried out at least one hour after the last cigarette has been smoked.

If the participant has used an inhaler: Lung function testing should be carried out at least one hour after the use of any inhaler.

If the participant has used an inhaler that is not a beta-2-agonist or an anticholinergic inhaler (see list below) in the last one to four hours: Lung function testing is carried out and the data recorded.

If the participant has used an inhaler that is a long acting beta-2-agonist in the last 8 hours: Another appointment should be made at another time when they have not taken their long acting Beta-2-agonist. HOWEVER – this may be difficult for them to do, in which case, testing should proceed and medication used should be recorded.

If the participant has used an inhaler that is a beta-2-agonist or an anticholinergic inhaler in the last one to four hours:

Another appointment should be made. HOWEVER – this may be difficult for them to do, in which case, testing should proceed and medication used should be recorded.

If the participant has taken an oral beta-2-agonist or an oral theophylline or an oral antimuscarinic within the last eight hours: Another appointment should be made. HOWEVER – this may be difficult for them to do, in which case, testing should proceed and medication used should be recorded.

If the participant has had a respiratory tract infection in the last three weeks: Another appointment should be made. HOWEVER – this may be difficult for them to do, in which case, testing should proceed. The number of days elapsed since the end of the respiratory infection should be recorded.

If, after a total of nine attempts, a participant is unable to produce a technically satisfactory maneuver, no FEV₁ or FVC will be recorded.

Criteria for bronchodilator challenge

The FEV₁ and FVC will be measured following the administration of 400ug salbutamol by metered dose inhaler (MDI) via a Volumatic spacer.

ACCEPTANCE CRITERIA: Any participant who fulfils all of the following criteria is accepted:

- 1) has produced technically satisfactory FEV₁ and FVC maneuvers (i.e., pre-bronchodilator measures),
- 2) is not excluded by the following exclusion criteria.

EXCLUSION CRITERIA: Any participant who fulfils any one of the following criteria is excluded:

- 1) has had a heart attack in the last three months,
- 2) has any heart disease for which he/she is taking medication,
- 3) has epilepsy for which he/she is taking medication,
- 4) is pregnant,
- 5) is breast feeding,
- 6) is taking a beta-blocker for any reason (including eye drops).

These conditions will be assessed by the Lung Function Questionnaire.

Making the appointment for testing

Ideally, lung function testing should be performed:

- 1) more than four hours after the use of a beta-2-agonist or anticholinergic inhaler,
- 2) more than eight hours after inhaled long acting beta-2-agonist, oral beta-2-agonist or theophylline or oral antimuscarinic.

When the appointment for lung function testing is made the fieldworker should determine if the participant is taking any of the following medications:

- 1) beta-2-agonist inhaler (short or long acting),
- 2) anticholinergic inhaler,
- 3) oral beta-2-agonist,
- 4) oral theophylline,
- 5) oral antimuscarinic.

If the participant is taking any of these medications (or any other inhaler) an appointment time should be agreed that will cause the least disruption to the participant's normal dosing schedule.

One simple way of ensuring compliance with these instructions is to:

- 1) avoid early morning appointments for those using inhalers,
- 2) fix a time for an appointment and then ask the participant to take their inhalers four hours before and oral medication eight hours before testing. Ask them to avoid taking their long acting beta-2-agonist if possible.

The fieldworker should ensure that the participant has not had a respiratory tract infection in the three weeks prior to testing and should advise the participant not to smoke for one hour prior to coming to the testing centre.

Participants who have not followed guidelines

Those who have had a cigarette in the last hour should have the lung function test delayed until one hour has elapsed.

Those who have had an inhaler in the last four hours or oral medication (or long acting beta-2-agonist) in the last eight hours may fall into one or more of the following categories:

- 1) misunderstood the instructions,
- 2) forgot the instructions,
- 3) ignored the instructions,
- 4) may have symptoms too severe to follow the instructions.

If an appointment cannot be rescheduled, lung function testing may still be carried out unless the participant is excluded for other reasons, and recent medication should be noted in the Lung Function Questionnaire.

LIST OF MEDICATIONS THAT MAY REQUIRE DELAYED SPIROMETRY TESTING

1) beta-2-agonist inhaler (short or long acting)

Generic Name	Brand Name
albuterol (short-acting)	Proventil, Ventolin
arformoterol (long-acting)	Brovana
formoterol (long-acting)	Foradil, Perforomist
Indacaterol (long-acting)	Arcapta Neohaler
levalbuterol (short-acting)	Xopenex
metaproterenol (short-acting)	Alupent
pirbuterol (short-acting)	Maxair
salmeterol (long-acting)	Serevent
bitolterol (short-acting)	Tornalate
terbutaline (short-acting)	Brethine, Bricanyl, Brethaire, Terbulin

2) anticholinergic inhaler,

Generic Name	Brand Name
ipratropium bromide (short-acting)	Atrovent
oxitropium bromide (short-acting)	Oxivent
tiotropium (long-acting)	Spiriva

3) oral beta-2-agonist,

Generic Name	Brand Name
pirbuterol	Maxair
carbutoleol	
bitolterol	Tornalate
procaterol	
clenbuterol	Dilaterol, Spiropent, Ventipulmin

4) oral theophylline,

Generic Name	Brand Name
theophylline	Uniphyll; several other

5) oral antimuscarinic.

General Guidelines for using EasyOne Spirometer

Preparing the Participant

Prepare for testing by having the participant loosen tight clothing, remove dentures, and relax. The participant may sit or stand. If standing you may want to perform testing in an area free of sharp table or counter edges, or have a chair handy as there is a slight possibility that the participant could faint during the strenuous spirometry maneuver.

Explain that the purpose of the test is to determine how much air a person's lungs can hold and how quickly that air can be expelled with a forceful, maximal effort. Since the spirometry test requires active participation by the participant it is very important to demonstrate the maneuver for the participant. Emphasize the essential elements of the test:

- filling lungs completely
- sealing lips around the spirette so that there are no leaks, taking care not to block its opening with teeth or tongue or bite down excessively
- blasting out as hard and fast as possible
- continue blowing out until the lungs are completely empty

Measuring the Forced Vital Capacity (FVC)

- Choose "Perform Test" in the main menu and then NEW. Confirm with ENTER. The instrument will now allow you to enter the participant data.
- Enter the corresponding participant data line by line. Use the keys as described in Chapter 4.3. Confirm with ENTER each time.
- After entering the participant data, you then move on to the "Test selection" menu. Choose the FVC test and confirm with ENTER.
- Insert a spirette into the instrument. Ensure that the arrow on the spirette is lined up with the arrow on the instrument.
- Once again briefly prepare the participant for the test. When the participant is ready, press ENTER. You will now hear the sensor buzzing.
- The instrument now prompts you to avoid air flow in the spirette since it is setting the baseline. It is advisable to block off the spirette on one end in order to ensure that the baseline is set precisely even if the room is draughty. An audible signal will sound when the baseline has been set. You will see prompt "Blast out" on the screen.
- Hand the instrument to the participant. Ask the participant to breathe in deeply, insert the spirette correctly into his or her mouth. Now ask the participant to exhale as firmly and as quickly as possible, and continue exhaling until all air has been exhaled.
- At the end of the maneuver, you will see a message on the display indicating whether the maneuver was acceptable. At least three acceptable maneuvers must have been performed before you see message "Session complete".

Checking the Test Quality

A quality grading from A to F is displayed at the end of the test. It provides information on the overall quality of the test. When interpreting the results, it is important to allow for the quality rating of the test. The quality ratings A to C indicate a reliable result. A quality rating between D and F indicates insufficient test quality. The result must then be interpreted with caution

Bronchodilator challenge

The salbutamol inhaler should be shaken and inserted into the volumatic. One puff should be activated and the participant asked to place their lips around the volumatic and to inhale and exhale five times. The salbutamol inhaler should be activated again and five inhalations/exhalations performed. This should be repeated two more times so that a total of 400ug of salbutamol has been delivered. Participants who are known asthmatics and familiar with Volumatic usage can self-administer this dose.

The FEV₁ and FVC are measured 10 minutes after the administration of bronchodilator. During the bronchodilator challenge FVC maneuvers will be used. Up to nine attempts may be made to obtain two technically satisfactory recordings after the inhalation of bronchodilator.

Screening Questionnaire

ID Number _____

Date _____

BEFORE STARTING THIS QUESTIONNAIRE PLEASE ASK THE FOLLOWING QUESTIONS

Have you had a cigarette in the last **hour**?

YES	NO
<input type="checkbox"/>	<input type="checkbox"/>

Have you used an inhaler (puffer) in the last **hour**?

YES	NO
<input type="checkbox"/>	<input type="checkbox"/>

IF 'YES' DELAY LUNG FUNCTION TESTS UNTIL ONE HOUR AFTER THE LAST CIGARETTE OR INHALER USE (RESPONSES DO NOT HAVE TO BE INCLUDED IN DATA RECORDER)

1. How many times have you been woken at night with shortness of breath in the last ***two weeks***?

NUMBER
<input type="text"/>

2. During the last ***two weeks***, has your breathing been

- (a) worse than usual?
- (b) same as usual?
- (c) better than usual?

TICK ONE BOX ONLY
1 <input type="checkbox"/>
2 <input type="checkbox"/>
3 <input type="checkbox"/>

3. Have you had wheezing or whistling in your chest **in the last 3 days?**

NO	YES
<input type="checkbox"/>	<input type="checkbox"/>

4. Have you woken up with a feeling of tightness in your chest **in the last 3 days?**

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

5. Have you been woken by an attack of shortness of breath **in the last 3 days?**

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

6. Have you been woken by an attack of coughing **in the last 3 days?**

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

7. Have you had an attack of asthma **in the last 3 days?**

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

8. Have you taken any medicine (including inhalers, aerosols or tablets) For asthma **in the last 3 days?**

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

9. Have you had any symptoms of hay fever or nasal allergy in the **last 3 days?**

NO	YES
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

10. Have you had a respiratory infection in the **last 3 weeks?**

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

IF 'NO' GO TO QUESTION 11

IF 'YES' AND THE PARTICIPANT IS WILLING TO RESCHEDULE, STOP AND MAKE A NEW APPOINTMENT. IF NOT, PROCEED WITH QUESTION 10.1

10.1 How many days ago did it end?

DAYS

--	--

11. Have you used an inhaler in the last **24 hours**?

NO YES

--	--

IF 'NO' GO TO QUESTION 12, IF 'YES' - :

11.1 What inhaler(s) did you use and for how many hours did you use it?

DRUG

HOURS

IF THE PARTICIPANT HAS USED A BETA-2-AGONIST INHALER OR AN ANTI-MUSCARINIC INHALER IN THE LAST FOUR HOURS, CONSIDER: -

- a) WAITING UNTIL FOUR HOURS SINCE LAST USE HAS ELAPSED**
- b) RESCHEDULING FOR ANOTHER DAY IF THE PARTICIPANT IS WILLING, IF NEITHER OF THESE IS POSSIBLE, PROCEED.**

12. Have you used any other medicine (including pills, capsules or suppositories) to help your breathing, or any oral anti-muscarinic in the **last 24 hours**?

NO YES

--	--

IF 'NO' GO TO QUESTION 13, IF YES: -

12.1 What medicine(s) did you take and how many hours ago did you take it?

DRUG

HOURS

IF THE PARTICIPANT HAS TAKEN AN ORAL BETA-2-AGONIST, AN ORAL THEOPHYLLINE OR AN ORAL ANTI-MUSCARINIC, CONSIDER RESCHEDULING FOR ANOTHER DAY IF THE PARTICIPANT IS WILLING, IF THIS IS NOT POSSIBLE, PROCEED.

- | | NO | YES |
|--|--------------------------|--------------------------|
| 13. Have you had a heart attack in the last three months ? | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. Are you currently taking any medicine(s) for your heart? | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. Are you currently taking any medicines for epilepsy? | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. Are you currently taking any medicine containing beta-blockers, including eye-drops? | <input type="checkbox"/> | <input type="checkbox"/> |

IF 'YES' TO ANY QUESTIONS 13-16 MEASURE BASELINE SPIROMETRY ONLY.

For women only:

- | | NO | YES |
|-----------------------------|--------------------------|--------------------------|
| 17. Are you pregnant? | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. Are you breast feeding? | <input type="checkbox"/> | <input type="checkbox"/> |

IF 'YES' TO QUESTIONS 17 OR 18 MEASURE BASELINE SPIROMETRY ONLY.

For all participants:

- | | NO | YES |
|---|--------------------------|--------------------------|
| 19. Would you like us to notify your health care provider of the results of any test? | <input type="checkbox"/> | <input type="checkbox"/> |

Coding for lung function questionnaire

The same general rules apply as for the main questionnaire.

Questions with NO / YES

- 1 NO
- 2 YES

Questions with 'TICK ONE BOX ONLY' instruction:

The number of the box ticked is the code for that answer.

QUESTION 11.1 Inhalers in the last 24 hours

Drug grouping should be consistent with those used for main questionnaire.

- 1 Beta-2-agonist (short acting)
- 2 Beta-2-agonist (long acting)
- 3 Non-specific adrenoreceptor agonists
- 4 Anticholinergic inhalers
- 5 Inhaled steroids
- 6 Sodium cromoglycate
- 7 Nedocromil
- 8 Compound bronchodilators

- 98 Not coded
- 99 Not known

QUESTION 12.1 Oral medications

Drug grouping should be consistent with those used for main questionnaire.

- 1 Beta-2-agonist
- 2 Non-specific adrenoreceptor agonist
- 3 Oral anticholinergics/antimuscarinics
- 4 Oral methylxanthines
- 5 Oral steroids
- 6 Oral antihistamines
- 7 Oral compound bronchodilators
- 8 Oral-antileukotrienes

- 98 not coded
- 99 not known

Spirometry Datasheet

Technician _____

Date _____

Participant ID _____

Participant date of birth (mm/dd/yyyy): ____/____/____ Age: _____

Sex: ☐ Female ☐ Male

Height (In inches): _____ Weight (In Pounds): _____

Measured Pre:

FVC: _____ FEV₁: _____ % FEV₁: _____

Measured Post:

FVC: _____ FEV₁: _____ % FEV₁: _____

% Predicted:

FVC: _____ FEV₁: _____ %FEV₁: _____

Session Quality: _____

Comments:

ADDITIONAL QUESTIONS FOR EACH HEALTH VISIT

1. Have you had any of the following in the last two months:*

Cold	NO	YES	If yes, was it diagnosed by a physician?	N	Y
------	----	-----	--	---	---

Flu	NO	YES	If yes, was it diagnosed by a physician?	N	Y
-----	----	-----	--	---	---

Throat infection	NO	YES	If yes, was it diagnosed by a physician?	N	Y
------------------	----	-----	--	---	---

Pneumonia	NO	YES	If yes, was it diagnosed by a physician?	N	Y
-----------	----	-----	--	---	---

Bronchiolitis	NO	YES	If yes, was it diagnosed by a physician?	N	Y
---------------	----	-----	--	---	---

2. Have you used any antibiotic medication because of respiratory infections during the last two months?*

NO YES

3. Have you used any other medication because of respiratory infections during the last two months?*

NO YES

* If 2nd visit of winter, ask the above “since last visit”

HOME ACTIVITY LOG

Technician: _____

Home ID: _____

Winter (1,2,3,etc.): _____

Sampling Date: _____

1. Were any of the following heating appliances, other than your wood stove, used in the home during the sampling period?

- | | | |
|-------------------------|----|-----|
| • Gas | No | Yes |
| • Electrical | No | Yes |
| • Propane | No | Yes |
| • Oil | No | Yes |
| • Other, specify: _____ | No | Yes |

2. Did any of the following activities or conditions occur in the home during the sampling period?

- | | | |
|---|----|-----|
| • Smoking by anyone in the home (cigarette, pipe, or other) | No | Yes |
| • Incense burning (or sweet grass patosway, cedar, etc.) | No | Yes |
| • Candle burning | No | Yes |
| • Kerosene/oil lamp | No | Yes |
| • Open windows | No | Yes |
| • Front door propped open | No | Yes |
| • Dusting/sweeping/vacuuming | No | Yes |
| • Boiling of Kouse Kouse | No | Yes |
| • Smudging | No | Yes |

IN HOME LOG

Technician: _____

Home ID: _____

Winter: _____

Sampling dates: _____

Sampling start time: _____

To be completed by resident for both 24 hour sampling periods.

For each row, please mark the day of week (M, T, W, Th, F, Sa, Su) and if you were at home.

Day	Day of week	Time			At home?	
1		7:00 AM	to	8:00 AM	Y	N
1		8:00 AM	to	9:00 AM	Y	N
1		9:00 AM	to	10:00 AM	Y	N
1		10:00 AM	to	11:00 AM	Y	N
1		11:00 AM	to	12:00 PM	Y	N
1		12:00 PM	to	1:00 PM	Y	N
1		1:00 PM	to	2:00 PM	Y	N
1		2:00 PM	to	3:00 PM	Y	N
1		3:00 PM	to	4:00 PM	Y	N
1		4:00 PM	to	5:00 PM	Y	N
1		5:00 PM	to	6:00 PM	Y	N
1		6:00 PM	to	7:00 PM	Y	N
1		7:00 PM	to	8:00 PM	Y	N
1		8:00 PM	to	9:00 PM	Y	N
1		9:00 PM	to	10:00 PM	Y	N
1		10:00 PM	to	7:00 AM	Y	N
2		7:00 AM	to	8:00 AM	Y	N
2		8:00 AM	to	9:00 AM	Y	N
2		9:00 AM	to	10:00 AM	Y	N
2		10:00 AM	to	11:00 AM	Y	N
2		11:00 AM	to	12:00 PM	Y	N
2		12:00 PM	to	1:00 PM	Y	N
2		1:00 PM	to	2:00 PM	Y	N
2		2:00 PM	to	3:00 PM	Y	N
2		3:00 PM	to	4:00 PM	Y	N
2		4:00 PM	to	5:00 PM	Y	N
2		5:00 PM	to	6:00 PM	Y	N
2		6:00 PM	to	7:00 PM	Y	N
2		7:00 PM	to	8:00 PM	Y	N
2		8:00 PM	to	9:00 PM	Y	N
2		9:00 PM	to	10:00 PM	Y	N
2		10:00 PM	to	7:00 AM	Y	N

Wood Stove Tracking Form

Study Area: _____

Home ID: _____

Winter (1,2,3,etc.): _____

The following parameters are recorded each time a home is visited:

Date/Time Home Visited	*Frequency of burning?	**Moisture content of wood?	***Stove thermometer used?	iButton downloaded?	Notes	Tech. ID.

*No burning, light burning, average burning, or heavy burning.

**Also indicate if moisture content measured from freshly split wood.

***Is thermometer being used by homeowner?

Revised November 6, 2014

WOOD STOVE USAGE LOG

Technician: _____

Home ID: _____

Winter (1,2,3,etc.): _____

Sampling Dates: _____

Date form completed: _____

1. During the sampling period, how would you describe the level of wood burning compared to a typical winter day (circle one):

No burning Light burning Average burning Heavy burning

2. What kind of wood was used or was used most frequently? *Please choose **ONLY** one.*

Lodgepole Pine Ponderosa Pine Fir Larch Tamarack

[LIST OTHER COMMON TYPES] _____

Nicotine Protocol

Sample Collection

- Before leaving for the home, prepare a fresh mixture of 0.1% ascorbic acid. This will stabilize the nicotine.
 - Measure out ____ g of ascorbic acid powder, and dispense into a small glass jar with lid.
 - Add ____ ml of DI water to the glass jar and screw on lid.
 - Gently invert the jar to mix the contents until all of the powder has dissolved.
 - Bring this jar to the field with you, along with a medicine dropper.
- Bring a template of known area--typically a rigid paper sheet with a 10×10cm² opening in the center that has been store in a smoke-free environment.
- Wear a pair of clean gloves.
- Choose a surface in the home that is very rarely cleaned—think tops of doors, ceiling fans, or tall book cases
- Secure the edges of the template to the chosen surface with painters' tape (also stored in a clean environment).
- Take out a 100% cotton face wipe, and set inside a clean Petri dish.
- Using the medicine dropper, draw up the 0.1% ascorbic acid solution and wet the wipe with it.
- Firmly press the wipe over the entire template area in both directions.
- Fold the wipe in half and insert into an amber, 20ml glass vial.
- Screw the lid on the vial and label it with the house ID and date.
- For every five samples, you will want to collect a field sample as well.
 - After you visit a home, remove one of the cotton face wipes from your kit (that you did not use!) and insert into a clean 20ml, amber vial.
 - Mark this with the word BLANK 1, 2, 3....etc. and the date.
- Store all glass vials that contain wipes in a freezer at -20 degrees within 2 hours of collection. Keep them out of light.

PROTOCOL TITLE: Residential Wood Smoke Interventions Improving Health in Native American Populations

ClinicalTrials.gov Identifier: NCT02240069

STATISTICAL ANALYSIS PLAN

The primary aim of the statistical analysis is to evaluate the efficacy of education and filtration unit interventions in improving measures of pulmonary function and reducing respiratory symptoms and infections. A descriptive analysis will be conducted initially using T-tests, or X² tests as appropriate to assess whether treatment groups differ with respect to pertinent baseline demographic variables and home characteristics, despite the randomization strategy. To account for correlations between repeated observations on the same subjects and subjects within the same household, mixed effects linear regression models will be used to evaluate whether pre- to post-intervention changes in spirometry or blood pressure measures differ between treatment groups. Main analyses will follow the intention to treat approach and assume data are missing at random. Analysis will allow for the inclusion of more than one subject per household with random effects held at both the individual and household level.

In the intent-to-treat (ITT) framework, with a given spirometry or blood pressure variable as the outcome of interest, we will include a 3-level fixed effect for treatment as the primary explanatory variable (levels = Placebo arm, Education arm, Filtration arm), a continuous fixed term for mean baseline (Winter 1) response measure, and a nested random effect to account for repeated measures (i.e., participant:home:cohort:area). The ITT models will utilize the study's randomization and not adjust for potential confounding variables in the primary analyses. Sensitivity analyses will be conducted to include potential confounding variables into the ITT models to assess the effectiveness of the randomization in controlling for confounding. A similar strategy will be used to assess the study's secondary outcome of change in indoor PM_{2.5} concentration with respect to household treatment assignment.

We will also conduct exposure-response (ER) analyses to evaluate associations between indoor PM_{2.5} measures and outcome measures outside of the RCT framework. The ER analyses will utilize a linear mixed model fit by restricted maximum likelihood (REML) with blood pressure or spirometry measures as the outcome and mean 48-hour indoor PM_{2.5} concentration as the exposure of interest. As with the ITT models, ER models will include a nested random term (i.e., participant:home:cohort:area) to account for repeated measures in the analysis as well as area-level factors such as the wood yards. Because the ER models do not utilize the study's randomization to help control for confounding, covariates will be included in the model to adjust for potential confounders, including age, gender, income, education, household resident smoking status, history of cardiovascular disease, and history of respiratory disease.

Model assumptions will be evaluated in all analysis frameworks. Analysis will be conducted using R version 4.0.4 (The R Foundation for Statistical Computing, Austria).