Libby Montana's Public Health Emergency, Asbestos Health Screening
Center for Asbestos Related Disease
Grant Number 6 NU61TS000295-02-00
Year 2, Quarter 4
(June 1, 2021 through August 31, 2021)

MAJOR FINDINGS

The goal of the funding opportunity is "early detection of certain medical conditions related to environmental health hazards." The Center for Asbestos Related Disease (CARD or CARD Clinic) screening program has been successful in early detection of asbestos related disease (ARD) and lung cancer resulting from the Libby asbestos exposure public health emergency. Outreach and education locally, regionally, and nationally are also conducted to support the screening programs. These efforts contribute significantly to the success of the grant. The clinical data in this report includes both the ARD and lung cancer screening (LCS) programs. Outcomes reported in the tables below are for all four quarters of year 2. Also included are year 1 numbers, and cumulative totals, if collected, include screening activities since 7/1/2011, the beginning of our first four-year screening grant.

Table 1 reports the number of ARD screenings, the number of patients diagnosed and percent diagnosis over time.

TABLE 1: SCREENING OUTCOMES				
Screening Rates	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 cumulative 9/1/20 - 5/31/21	Cumulative totals
# ARD Screening	6,563	599	397	7,559
# Diagnosed	2,552	143	74	2,769
Percent Diagnosed	39%	24%	19%	37%

Table 2 reports the number of ARD screening, the number who needed CT evaluations to determine diagnostic status, the number of patients diagnosed with ARD, and the number of individuals who were eligible for ARD Medicare. Individuals can be eligible for Medicare through the Environmental Health Hazard designation criteria, but not be clinically diagnosed with ARD. This situation occurs in three different ways: (1) A positive chest x-ray B-read. (2) A positive CT read by an outside radiologist. (3) A documented diagnosis of an asbestos related cancer (mesothelioma, lung, colon, rectum, larynx, stomach, esophagus, pharynx and ovarian). It is noteworthy that most screening participants did not have occupational or household exposures to Libby Amphibole asbestos, but reported environmental exposure only.

TABLE 2: SCREENING OUTCOMES						
Screening Outcomes	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 total 9/1/20 - 8/31/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
# ARD screenings	6,563	599	118	397	996	7,559
# CT diagnostic appointments	4,229	307	44	200	507	4,736
# ARD diagnosed	2,552	143	19	74	217	2,769
# ARD Medicare eligible	2,880	166	24	91	257	3,137
% diagnosed w/ environmental exposure onl	not collected	85%	84%	85%	85%	not collected

GOALS/OBJECTIVES

Goal 1: Provide medical screening in the Libby area and across the nation

Asbestos Related Disease screening in Libby and across the nation:

Table 3 details types of screening appointments. The number of screenings this quarter began to increase with more outreach and education related to COVID-19 safety precautions as well as a decrease in number of cases and vaccination availability however toward the end of the quarter numbers again dropped off with a surge of local COVI-19 cases caused by the Delta variant. Even after years of asbestos health screening programs in the Libby, Montana; new screening patients participating for the first time make up a significant portion of those seen (41% this quarter). Approximately half of all screening participants live outside of Lincoln County and this has remained true for the past nine years of the program. It is estimated that over 80,000 people could have spent significant time in the Libby, Montana area while the mine was in full operation, so there is likely a large number of potential screening patients that have not yet been through the program. For those who qualify, asbestos health screening is offered either in Libby at the CARD Clinic or at a distance if they cannot travel to Libby. Due to the Coronavirus pandemic, CARD has continued to promote more long distance screenings to limit travel and potential exposures. Successful completion of long distance screening (LDS) occurs when the participant completes all screening related activities (questionnaires, phone interview, spirometry, chest x-ray, and CARD medical provider visit by phone, plus a CT and second medical provider visit by phone if appropriate).
The total number of appointments reported exceeds the number of patients because many screenings include two appointments; an initial appointment and then a CT follow-up appointment. Each screening participant is asked if they would like to share their health information and screening results with ATSDR's Tremolite Asbestos Registry (TAR), and with their primary care provider (PCP). Most say yes to both consents. If screening patients are diagnosed with ARD, they are no longer eligible for asbestos health screenings but they are followed long-term by CARD for monitoring and disease management. During quarter four, 306 past screening participants were seen for ARD follow-up.

TABLE 3: TYPES OF SCREENING APPOINTMENTS AND DIAGNOSIS RATES

Appointment Type	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 8/31/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
# screenings	6,563	599	118	397	996	7,559
# new screening patients	4,806	252	48	168	420	5,226
# rescreenings	1,757	347	70	229	576	2,333
# Lincoln County, MT residents	3,366	310	60	205	515	3,881
# LDS eligible screenings done in clinic	2,679	114	38	89	203	2,882
# of LDS patients	519	125	14	68	193	712
# in clinic appointments (includes both visits)	9,445	680	129	447	1,127	10,572
#LDS appointments (includes both visits)	1,347	226	33	150	376	1,723
Consented for TAR registry	5,015	483	89	290	773	5,788
Consented to notify PCP of screening results	not collected	479	92	289	768	not collected
# past screeners diagosed with ARD seen for	not collected	2550	306	1083	3,633	not collected

Table 4 details demographic data related to age and gender of the screening population.

TABLE 4: DEMOGRAPHICS OF SCREENING PARTICIPANTS						
Demographics	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 8/31/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
# screenings	6,563	599	118	397	996	7,559
# females	3,448	355	65	231	584	4,034
# males	3,115	244	53	166	411	3,525
# under age 35	351	27	8	24	51	402
# between 35-49	1,289	116	23	77	193	1,482
# between 50-64	3,279	294	53	190	484	3,763
# age 65+	1,644	162	34	106	268	1,912

Table 5 summarizes important clinical findings including the number of participants who report respiratory symptoms that may be asbestos related, the number with abnormal spirometry breathing test results, and the number with abnormal body mass index (BMI). This quarter, some screening participants did not have a spirometry test due to pandemic precautions. Spirometry testing require forceful exhalation and cannot be done with a mask on. Rapid COVID testing prior to spirometry was added as a component of the grant to enable spirometry testing to be conducted safely. Symptoms, spirometry results and BMI information are all used in conjunction with health and exposure histories for clinical decision making to determine whether a CT scan should be performed. In addition, those with high BMIs are offered education about healthy diet and exercise as appropriate for their state of health. A CXR is done on every screening participant but occasionally participants will refuse their chest x-ray and participate in screening anyway. This is usually because only a CT is medically warranted based on past medical care or referral, the individual is too young to be exposed to radiation for screening purposes, or she is concerned about possible pregnancy. The number of abnormalities identified on CXR is low because CARD's medical providers do not typically diagnose ARD from x-rays. If ARD is suspected, a CT scan is ordered. CT scans are considered the gold standard for ARD imaging.

TABLE 5: CARD CLINICAL FINDINGS ASSOCIATED WITH ASBESTOS RELATED DISEASE						
CARD Clinical Findings	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 8/31/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
# screenings	6,563	599	118	397	996	7,559
# symptomatic	4,408	381	72	250	631	5,039
# abnormal spirometry	1,699	171	31	76 (116 not done due to COVID)	247	1,946
# abnormal BMI (≥30)	not collected	248	47	144	392	not collected
# CXRs completed	6,361	592	116	392	985	7,345
# no CXR done	202	7	2	4	11	213
# abnormal CXR (CARD)	394	17	2	5	22	416
pleural only	356	15	2	4	19	375
interstitial only	19	1	0	0	1	20
both	19	1	0	1	2	21
# CTs completed	4,229	307	44	200	507	4,736
# abnormal CT (CARD)	2,525	143	19	73	216	2,741
pleural only	1,988	122	18	63	185	2,173
interstitial only	12	5	1	1	6	18
both	525	16	0	9	25	550

Table 6 describes significant findings of ARD screening. These findings include focal opacities, masses, and confirmed cancers. In addition, is also collected to track incidental findings, specialist referrals, and depression follow-ups completed as part of screening. Confirmed cancers that are possibly asbestos related and tracked by CARD include lung, colon, rectum, larynx, stomach, esophagus, pharynx and ovary. These are based on Medicare's Environmental Health

Hazards checklist. Only cancers for which CARD has medical record confirmation are reported. Patients with significant findings are referred for appropriate follow-up, but many are referred to primary care rather than specialists for initial evaluation. Not all patients share the results of their follow-ups with CARD.

Focal opacities are common in screening studies, and their prevalence is well documented in literature. Only a small percentage of focal opacities turn out to be cancers, however they are all tracked to be followed in future screenings. They are also tracked because individuals between the ages of 55 and 84 with at least 20 pack years of smoking history and documented exposure to asbestos with a nodule greater than 6mm (this was increased from 4mm previously per updated Fleischner Society Guidelines released in 2018) can enroll in the lung cancer screening program. Lung masses reported in this table do not include those identified through the lung cancer screening program.

One of the questionnaires completed by screening patients includes a depression assessment. If participants' scores are abnormally high, they are referred to the Case Manager for follow-up assessment and possible referral to other community support services.

TABLE 6: SIGNIFICANT FINDINGS IDENTIFIED THROUGH ARD SCREENING

Significant Findings	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 8/31/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
# lung masses	57	6	0	5	11	68
# thyroid masses	22	0	0	0	0	22
# kidney masses	23	0	0	0	0	23
# breast masses	19	1	0	1	2	21
# other masses	52	1	1 (adrenal)	3	4	56
Total # masses identified	173	8	1	9	17	190
# focal opacities	1,123	159	18	96	255	1378
# cancers verified possibly asbestos related	not collected	14	2	14	28	not collected
# participants w/ incidental findings	not collected	252	54	183	435	not collected
# specialist referrals	not collected	3	0	0	3	not collected
# depression follow-ups completed	not collected	190	53	100	290	not collected

Fecal Occult Blood Testing:

Fecal occult blood testing (FOBT) is offered to all screening participants between the ages of 50-75 since asbestos exposure can increase risk of developing colon cancer. If a participant had regularly scheduled colonoscopies or refused participation for another reason, they were not given an FOBT test kit. Thirteen of 30 FOBTs given (43%) in quarter 4 were returned and more completed FOBT tests will likely be returned after the end of the quarter. For those who are given an FOBT but do not return it, a follow-up letter is mailed as a reminder. For those with positive results, a repeat FOBT is offered as well as a referral for further follow-up.

TABLE 7: FECAL OCCULT BLOOD TESTING FOR EARLY DETECTION OF COLON CANCER

Fecal Occult Blood Tests	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 8/31/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
# FOBTs given	2,223	204	30	118	322	2,545
# FOBTs returned	846	102	13	62	164	1,010
# FOBTs abnormal	4	0	0	0	0	4

Outside Radiology Reads:

A reader from a panel of five certified B-readers, including three radiologists, reads every image taken through the screening program. Screening CT scans are only distributed to the three radiologists; chest x-rays are distributed to all five B-readers on the panel. Images are distributed by mail to readers in a systematic cyclic process to ensure even workloads. Outside reads typically take 4-7 weeks to be returned, so the number of returned reads reported for each new

quarter is usually low. Cumulative end of the grant year totals will reflect all of them even though they were not received during the grant quarter that the participant was screened in.

TABLE 8: SINGLE OUTSIDE READ RESULTS BY B-READER (CXR) OR RADIOLOGIST (CT)						
Outside Read Findings	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 8/31/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
# CXRs	6,361	592	116	392	985	7,345
# B reads	6,313	592	64	341	933	7,246
# B reads abnormal	551	32	1	16	48	599
Pleural	452	26	1	12	38	490
Interstitial	73	4	0	4	8	81
Both	26	2	0	0	2	28
# CTs	4,229	307	44	200	507	4,736
# Outside CT reads	4,163	307	25	181	488	4,651
# Outside CT reads abnormal	1,453	56	3	23	79	1,532
Pleural only	797	17	2	10	27	824
Interstitial only	370	33	1	11	44	414
Both	286	6	0	2	8	294

Quality control panel readings of radiographs and HRCT scans:
Twice annually, peer review sessions are held as a quality control measure. The second peer review comparison phone call discussion of year 2 was on August 28, 2021. Post peer review comparison analysis was completed by Dr. Curtis Noonan, CARD's contracted epidemiologist. For CXRs, 54 records were selected for peer review by the 5 person panel of B-readers, and 24 CT reads were made by the panel of 3 thoracic radiologists. One of the radiographs and one of the CT studies were indicated as 'extremely poor quality' and 'uninterpretable' by readers. Thus, the results presented here are based on 53 patients for CXR and 23 patients for CT. The comparisons are based on a SAS macro, %MAGREE, which allows for comparison of multiple raters when multiple responses (ratings) are on a nominal scale. This methodology employed by the macro is based on Fleiss (2003) and Fleiss et. al. (1979).

Year 2, 2nd peer review tables

Table 9: Frequencies and overall Kappa considering pleural and parenchymal CXR reads separately and combined among five outside readers.

	n (%)*	Kappa: Pleural Reads	Kappa: Parenchymal Reads	Kappa: Both Reads Combined
Pleural Only	23 (8.7%)	--	--	0.286
Parenchymal Only	18 (6.8%)	--	--	0.523
Both Positive	3 (1.1%)	--	--	--
Both Negative	221 (83.4%)	--	--	0.414
Overall	265 (100%)	0.275	0.560	0.387

* Five repeats of 53 CXR studies.

Table 10: Frequencies and overall Kappa considering pleural and parenchymal CT reads separately and combined among three outside readers.

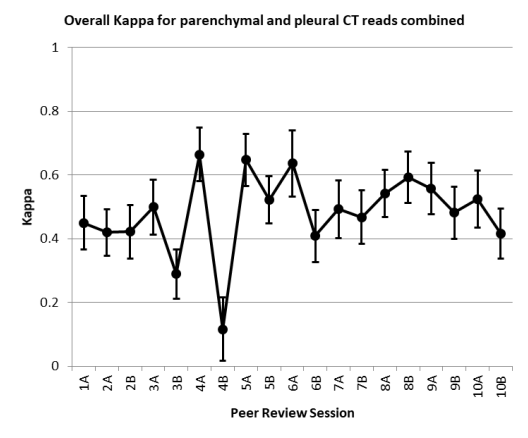
	n (%)*	Kappa: Pleural Reads	Kappa: Parenchymal Reads	Kappa: Both Reads Combined

Pleural Only	13 (18.8%)	--	--	0.431
Parenchymal Only	13 (18.8%)	--	--	0.431
Both Positive	5 (7.3%)	--	--	0.353
Both Negative	38 (55.1%)	--	--	0.414
Overall	69 (100%)	0.699	0.324	0.416

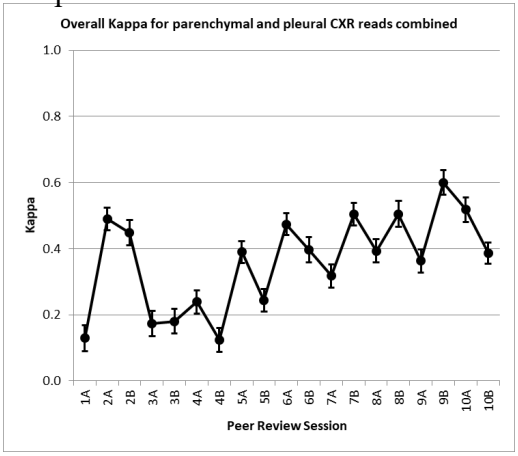
* Three repeat reads of 23 CT studies.

Trends from all peer review sessions

Graph 1: CT abnormalities



Graph 2: CXR abnormalities



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Lung Cancer Screening for High Risk Individuals:

Early detection of possible asbestos-related cancers through participation in Lung Cancer Screening (LCS) is available to high risk individuals. Participants eligible for the LCS program are between the age of 55-84, have at least 20 pack years of smoking history, and were diagnosed with ARD **or** had Libby asbestos exposure and a nodule greater than 6 mm. A thoracic radiologist experienced in lung cancer detection reads all low-dose CT scans (LDCTs). Lung cancers reported in Table 11 do not include lung cancers identified through the asbestos related disease screening program. 21% of this quarter's lung cancer screening participants were active smokers and they were given brief cessation education and counselling, and offered free one-on-one counselling as well. Each active smoker participating in the program received smoking cessation materials with their lung cancer screening results. For those with normal lung cancer screening results, the participant is typically contacted by CARD staff with results after a medical provider reviews them. A provider visit is scheduled to discuss results if requested by the participant, if they are coming to CARD for another reason, or if CARD's medical provider feels results warrant it. Every participant is educated about the option of having a provider visit

and about the benefits and risks of LDCT screening in a pre-engagement pamphlet sent prior to participation. Results letters are sent to each participant after screening to keep for their records.

TABLE 11: LUNG CANCER SCREENING OUTCOMES SPECIFICALLY FROM LUNG CANCER SCREENING PROGRAM

Lung Cancer Screening	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 8/31/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
# completed LDCTs	3,008	524	169	510	1,034	4,042
# new LCS participants	not collected	65	16	52	117	not collected
# of established participants	not collected	449	153	458	907	not collected
# less than annual f/u	not collected	52	14	67	119	not collected
# referrals	not collected	12	6	13	25	not collected
# confirmed cancers	29	3	0	4	7	36
# other findings	not collected	1	0	1	2	not collected
# current smokers	not collected	114	35	120	234	not collected
# no longer participating	not collected	33	17	37	70	not collected

Lung cancer screening is considered most effective when conducted annually so that cancers can be found at the earliest stages and be treated quickly. Table 12 shows the number of lung cancer screening participants using the program over consecutive years. Participants join the program whenever they become eligible and interested, but some drop out due to being diagnosed with lung cancer, dying, moving out of the area, aging out of the program, or being lost to follow-up for some other reason. In addition, during the pandemic, many participants did not get their annual LCS because only essential imaging was being done. For participants who remain local and eligible for the program, three recall attempts are made annually to encourage ongoing participation.

TABLE 12: CONSECUTIVE YEARS LUNG CANCER SCREENING

Consecutive years	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 8/31/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
Established LDCT participants	478	445	153	458	903	1381
Participated 2-4 consecutive years	283	238	61	196	434	717
Participated 5-8 consecutive years	141	161	61	163	324	465
Rescreened but not consecutive years	54	46	31	99	145	199

ANA screening:

A screening blood test for antinuclear antibodies (ANA) has been added to the ARD screening program for this grant. The test is offered to all ARD screening participants based on research that has shown a relationship between Libby asbestos exposure and autoimmune disease. Table 13 summarizes ANA test results. Those with positive results are educated and if medically warranted brought in for an additional provider visit and/or referred for follow-up. Results are also sent to Dr. Jean Pfau quarterly for review and interpretation.

TABLE 13: ANA Results	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 8/31/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
# ANA tests completed	not collected	424	96	308	732	not collected
# Abnormal ANA	not collected	93	16	63	156	not collected
# Abnormal ANA requiring f/u	not collected	23	10	25	48	not collected
% Postive ANA not diagnosed	not collected	not collected	29% (2 of 7)	67% (22 of33)	0	not collected

ANA interpretation by Dr. Pfau

This fourth quarter screening group for the grant year 2 continues with trends reported previously for Libby, by presenting with a high frequency of positive ANA tests and of autoimmune

diagnoses. This group had 8 cases of RA, 3 cases of lupus, but no cases of Sjogren's Syndrome or scleroderma. Therefore, Lupus and RA prevalence remain above expected within this quarter's screening group, and were two of the diseases with significant increases in prevalence in Libby compared to expected (Diegel, R., 2018). There were more cases of autoimmune diseases that are not characterized by having positive ANA tests, so ANA testing would not assist with screening for those diseases. Nevertheless, the prevalence of most of these in Libby do not appear to be elevated above expected. This screening group has a very high frequency of autoimmune symptoms (56.4%), suggesting a continuing concern about undiagnosed autoimmune conditions that do not meet diagnostic criteria, but that fit the diffuse characteristics of the autoimmune conditions seen in populations exposed to Libby Asbestiform Amphiboles (LAA) (Diegel R., 2018).

In this group, a negative ANA test was not significantly associated with likelihood of a negative CT test, contrary to what we hypothesized from our previous work (Pfau, J., et al., 2019). However, these data are preliminary, with very small numbers of patients. The data will be further evaluated in the future when more of the CT scans are completed.

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Smoking Cessation:

Smoking cessation continues to be extremely important for patient health maintenance and the screening program goals. Respiratory therapists and spirometry techs provide brief counseling to all identified smokers upon review of their tobacco use history questionnaire. Past quit attempts and current interest in quitting are explored. If interested, educational material is given and referral is made to CARD's Case Manager who is trained as a tobacco treatment specialist. Medical providers also educate about the importance of smoking cessation and refer to the Case Manager for free cessation counseling when patients express genuine interest in pursuing

cessation. The Case Manager provides education and resources such as CARD's smoking cessation booklet and Montana Quit Line information (counseling, follow up calls and cessation medications at low or no cost). Smoking cessation information is placed in the waiting room and all patient care rooms as well and when attending community events such as Farmer's Markets, CARD educates community members about smoking cessation and smoking/vaping prevention for school age attendees. This quarter's numbers include farmer's markets, and all other events attended by CARD's outreach team. The health fair hosted by Cabinet Peaks Medical Center was specifically addressing smoking and vaping prevention and cessation.

TABLE 14: SMOKING CESSATION OUTCOMES AND OURTREACH ACTIVITIES

Smoking Cessation	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 8/31/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
# of screeners who smoked	706	98	16	67	165	871
# who quite since last screening appointment	50	8	3	6	14	64
# brief cessation ed by medical staff	395	77	16	40	117	512
# booklets mailed regionally/nationally	not collected	32	1	19	51	51
# booklets given in clinc/local	not collected	154	20	105	259	259
# individual follow up smoking cessation sessions	not collected	64	6	38	102	102
# engaged in ongoing counseling	47	17	0	5	22	69
community members educated re: smoking cessation/prevention	not collected	523	657	911	1,434	1,434

Goal 2: Conduct Nationwide Outreach to Raise Awareness (of screening and certain Medicare benefits) **and Goal 3: Provide Nationwide Health Education (**to detect, prevent, and treat environmental health conditions)

Outreach and education go hand in hand. The goals of providing outreach and education, about asbestos health and lung cancer screening, risk factors, asbestos related disease, health management, and certain Medicare benefits are often approached as one combined goal. Quality control processes are in place as all CARD employees involved in outreach and education work very closely with the screening Project Director and, as appropriate, the Medical Providers, to develop and conduct screening outreach and educational activities. All final printed materials and community engagement activities are approved by the Project Director. CARD's physicians review and approve all technical and medical educational materials for professional audiences. Three main outreach and education target audiences include current and potential screening participants, members of the general public who could encounter Zonolite attic insulation or other environmental health hazards, and medical professionals. Each screening participant receives a patient education book along with in-person education by CARD staff, and all smokers are offered free smoking cessation services by CARD's Case Manager. In addition, anyone diagnosed with ARD receives benefits education about Medicare benefits and the Medicare Pilot Program for Asbestos Related Disease (MPPARD).

Outreach Efficacy for Enrollment in Certain Medicare Benefits for ARD:
A detailed goal of the grant is to increase awareness about Medicare benefits available for individuals diagnosed with ARD resulting from Libby asbestos exposure. Traditional Medicare becomes available after ARD diagnosis as a result of Libby asbestos exposure regardless of the

individual's age or disability status. Receipt of Medicare is facilitated by placing an EHH (Environmental Health Hazard) designation on an individual's Medicare status if they are diagnosed with Libby ARD. The MPPARD is also available for EHH Medicare patients who live in the program's designated geographic area (The counties of Lincoln, Flathead, Glacier, Lake, Sanders, Mineral, and Missoula in Montana; Benewah, Bonner, Boundary, Clearwater, Kootenai, Latah, and Shoshone in Idaho; and Ferry, Lincoln, Ponderay, Spokane, Stevens and Whitman in Washington.)
The numbers reported below in Table 15 are not all screening participants as some had a diagnosis of ARD resulting from Libby asbestos exposure prior to implementation of the current and prior screening grants. The number of people over 65 is low because they already have Medicare and only need an EHH if they are eligible for and interested in the MPPARD.

TABLE 15: ENVIRONMENTAL HEALTH HAZARD (EHH) DESIGNATION AND ELIGIBILITY FOR BENEFITS

Certain Medicare Benefits	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 8/31/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
# of EHHs completed	3,263	118	22	82	200	3,463
# of EHHs for people over 65	1,101	39	3	26	65	1,166
# of EHHs for people under 65	2,162	71	19	48	119	2,281
# who have improved access to medical care for chronic conditions	716	34	11	23	57	773

Table 16 reports use of MPPARD benefits. The categories reported in the table were updated during the last year of the prior grant to reflect the most accurate numbers available to CARD. After an individual is diagnosed through the screening program, the process to get on the MPPARD takes two months. Table 16 also includes the number of individuals who have improved access to medical care for chronic conditions. This means they are under age 65, have signed up for Medicare via EHH, and they have a chronic condition that needs ongoing medical monitoring. The chronic conditions included are rheumatoid arthritis, lupus, chronic obstructive pulmonary disease (COPD), congestive heart failure (CHF), pacemaker, intraventricular cardiac defibrillator (CD), hypertension, and diabetes.

Table 16: UTILIZATION OF PILOT BENEFITS

Pilot Benefit Utilization	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 8/31/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
# enrolled in Medicare Pilot	1,728	50	7	25	75	1,803
# **screening** participants enrolled in Pilot after diagnosis	672	5	0	2	7	679
# of paid Pilot claims	not collected	7,658	1,639	6,589	14,247	not collected
# Pilot related encounters (face to face, email, phone call, education)	not collected	1,007	316	1,070	2,077	not collected
# Pilot approved service authorizations processed	not collected	750	202	679	1,429	not collected
# community Pilot education	not collected	95	702	11,167	11,262	not collected

Why Are Individuals Being Screened?
CARD tracks why individuals are being screened to better understand and meet the needs of new and potential screening participants. This facilitates our efforts to continue reaching potential participants who aren't aware of the free screening program. The information also helps CARD develop effective outreach materials and to focus educational efforts on areas of interest to potential and current screening participants. Some people do not answer the question, and LDS

patients receive surveys during their Research visit and sometimes their provider visit has not been completed so the number of surveys this quarter is lower than the number of participants who completed screening.

TABLE 17: WHY ARE YOU BEING SCREENED?						
	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 8/31/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
# answered the question	3,150	409	87	343	752	3,902
# LDS	643	97	16	85	182	825
# in clinic	2,507	369	70	258	627	3,134
Medical concerns	1,382	98	12	55	153	1,535
Family member diagnosed	739	91	8	32	123	862
Access to Benefits	268	19	2	4	23	291
Support research	316	20	0	5	25	341
Legal reasons	54	7	0	0	7	61
Screening purposes/multiple	280	170	59	239	409	689
Employer Requested Screening	111	1	6	9	10	121

Outreach Effectiveness Measure:

When individuals engage in screening, they are asked the multiple choice question, "How did you hear about the CARD screening program?" to help CARD measure the effectiveness of outreach activities. Answers are reported in table 18 with in-clinic and long distance identified separately as outreach efforts for those two populations are different. Results are reviewed by the Project Director, and our contracted marketing firm, Brand It, to determine the most effective methods and where to focus efforts moving forward.

TABLE 18: HOW DID YOU HEAR ABOUT THE CARD SCREENING PROGRAM?						
How did you hear about screening? (IC= in clinic, LD= long distance)	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 8/31/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
IC- # who answered	3,213	315	72	260	575	3,788
IC- traditional advertising (radio, TV, newspaper)	1,548	149	25	242	242	1,939
IC- website/social media	0	36	27	123	123	159
IC- Community networking (parades, local events)	1,329	123	20	203	203	1,655
LD- # who answered	600	97	16	182	182	879
LD- traditional advertising (radio, TV, newspaper)	244	27	5	53	53	324
LD- website/social media	44	29	0	34	34	107
LD- Community networking (events, word of mouth)	312	41	11	94	94	447

Screening Satisfaction:

To provide the best possible customer service, CARD has begun using screening satisfaction surveys which were mailed out to all program participants and also made available on our website starting at the beginning of grant year 2. Twenty-five percent of the surveys sent were returned, and the vast majority provided very positive feedback. The surveys ask about program participants' experiences overall, and about their interactions with CARD's staff. Results can remain anonymous or respondents can choose to identify themselves. Any negative responses are followed up on immediately to address patient concerns and facilitate improvement.

TABLE 19: SCREENING SATISFACTION SURVEY RESULTS			
	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 8/31/21	Cumulative totals
# surveys sent	120	398	not collected
# surveys returned	36	101	not collected
overall: excellent	13	59	not collected
overall: good or very good	5	19	not collected
overall: fair or poor	0	1	not collected
staff: excellent	13	44	not collected
staff: good or very good	5	19	not collected
staff: fair or poor	0	0	not collected

Targeted Outreach and education- Local and regional/national:

Many residents of the local area have still not participated in screening, and others have only been screened once years ago. For this reason, recruitment continues locally, and education as well as community outreach are extremely important. Ongoing education to locals helps remind them about the free screening program, reinforces the importance of rescreening, and corrects any misinformation that takes hold through social media or community conversations. Maintaining and improving relationships with local businesses and tourism efforts are also very important to counter a deep-rooted community concern that Libby's asbestos legacy hurts the local economy and deters tourism. CARD works to be a positive force in the community supporting local causes and participating in community events as much as possible, especially educationally. The local area is considered the communities of Libby, Troy, Eureka, Yaak, Kila, Marion, Bull Lake, Trout Creek, Thompson Falls and Noxon.

Table 20 details local outreach and education efforts. The events sponsored during quarter 4 included a Unite for Youth softball game, Kootenai Country Montana's Chainsaw Carving Championship, two student school supply events, a Rotary event, a youth soccer team, a golf tournament, and two healthcare fundraisers. Community meetings attended included Rotary, Kiwanis, Lincoln County Health Alliance, Libby Chamber of Commerce, and Communities that Care. Education articles in newspapers included managing pain, heat related illnesses and a COVID vaccine update. CARD participated in Cabinet Peaks Medical Center's annual Health Fair on June 12 which was attended by 600 people. 25 screening applications were given out at the event and 10 students were educated about vaping and smoking. The booth had 55 visitors stop and interact with staff.

On Thursdays, throughout the quarter CARD set up a booth at the Farmers Market. On June 6, CARD staff members were able to interact with 43 attendees and five screening applications were handed out. Each week, CARD's presence contributed to community collaborations as well as offering an opportunity for patient and community education and outreach. We sent an every door direct mailing out to Lincoln County in July. 10,695 screening information postcards were sent to households. Parades included the 4th of July in Troy, Liberty on Parade in Libby held on June 28, and the Ignite the Nites car show parade all of which draw crowds from out of town. Items given out included information about CARD Screening. For Google AdWords, an impression is counted each time our ad is shown on a search result page. Clicks are counted when our ad is clicked on. Website visits include all traffic that is coming into the website.

Education website visits are the total web visits to all web pages that contain patient education information.

TABLE 20: TARGETED OUTREACH AND EDUCATION- LOCAL (Lincoln County)						
Method	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
Local newspaper ads	598	157	29	116	273	871
Education article in newspapers	47	12	3	12	24	71
Health Link and Health Resource Guide	10	2	0	0	2	12
Radio ads	9,500	4,661	1,398	2,166	6,827	16,327
TV ads	8,236	422	11,137	11,137	11,559	19,795
Educational brochures given (screening, LCS, CARD)	443	298	206	1,253	1,551	1,994
Patient Education booklets	3,452	310	60	205	515	3,967
Parades	36	2	3	3	5	41
Community events sponsored	140	45	9	25	70	210
Commmunity meetings	218	77	20	78	155	373
Google AdWords Impressions	not collected	10,951	2,503	14,239	25,190	not collected
Google AdWords Clicks	not collected	771	213	1,771	2,542	not collected
Website visits	not collected	1,705	204	3,286	4,991	not collected
Website visits to patient education pages	not collected	624	45	391	1,015	not collected
community presentations/ events attended	76	17	17	44	61	137
website visits to provider education pages	not collected	207	23	175	382	not collected
newsletters sent locally	not collected	8,143	3,639	11,379	19,522	not collected

Table 21 details regional and national outreach and education efforts. YouTube channel numbers are a count of how many times our videos were viewed.

TABLE 21: TARGETED OUTREACH AND EDUCATION- REGIONAL & NATIONAL						
Method	Before Current Grant 7/1/11-8/31/19	Yr. 1 Total 9/1/19 - 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
Newspaper -outreach	76	68	6	57	125	201
Radio ads -outreach	10,242	755	0	0	755	10,997
TV ads -outreach	8,236	21,888	81,632	109,214	131,102	139,338
Website -outreach	not collected	17,299	11,038	36,740	54,039	not collected
Website -patient education	not collected	2,411	371	2,431	4,842	not collected
Website -provider education	not collected	744	183	825	1,569	not collected
Google AdWords Impressions- outreach	not collected	53,850	98,412	228,427	282,277	not collected
Google AdWords Clicks- outreach	not collected	3,165	10,307	20,652	23,817	not collected
Educational brochures given (screening, tobacco, LDS)	not collected	119	40	162	281	not collected
YouTube Channel	14,100	2,822	864	3,337	6,159	20,259
Patient Education booklets - education	3,298	277	58	170	447	3,745
Lung cancer screening brochures - education	180	64	63	133	197	377
Health promotion events sponsored -outreach	36	5	1	11	16	52
Newsletters sent	not collected	7,434	3,953	11,031	18,465	not collected

Targeted Outreach/Education to healthcare professionals

Raising awareness about Libby asbestos within the medical community is important to help facilitate referrals and coordinate care. Provider education packets are sent to primary care

providers of screening participants with their screening results. Mailings to healthcare professionals this quarter included twenty-three letters sent to specific providers with shared patients regarding the patients' specific needs related to findings during their CARD appointments. 25 new medical providers were added to CARD's mailing list and a press release was sent out regarding CARD's organizational structure changes and our new Medical Director, Dr. Karen Lee Morrissette. The Medical Director of Finger Lakes Occupational Health Services reached out and discussed Libby Amphibole exposure with Dr. Brad Black related to community exposures this quarter, and a meeting was held in New York to discuss Libby's asbestos health and lung cancer screening programs. These activities provided an excellent opportunity for education and collaboration on collecting accurate and reliable exposure histories, data management and screening procedures. In addition, two remote workers in research for Duke University who recently moved to the area reached out to learn about CARD and our asbestos health screening program. In July, the COVID testing codes were updated with SwiftCurrent, our third party service that manages payments for long distance screening services, so that LDS patients can also get rapid tests covered by the grant prior to having spirometry tests. This is a very important measure implemented to protect others because spirometry testing requires repeatedly breathing deeply and blowing it out as hard and fast as possible, an activity with a high likelihood of spreading virus.

TABLE 22: TARGETED OUTREACH TO- HEALTHCARE PROFESSIONALS

Method	Before Current Grant	Yr. 1 Total 9/1/19 - 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
Website -provider education	not collected	744	0	330	1,074	not collected
Mailings	not collected	121	23	72	193	not collected
CARD newsletter -education	27,948	1,056	571	1,985	3,041	29,575
provider education book mailed	1,351	271	68	152	423	1,690
Professional Conferences - education/outreach	45	3	1	10	13	49
Medical professionals -education	188	46	41	305	351	
Press release pick ups	not collected	228	104	424	652	not collected
other targeted outreach efforts	not collected	301	13	35	336	not collected

Website Use:

CARD's website is an important tool for outreach, education, and communication with target populations. Table 23 summarizes use of CARD's website during quarter 4. Website materials are regularly updated and use is tracked to help improve content for users. Website updates this quarter included updating staff members as well as performing a monthly backup and plugin update site wide as well as uploading outreach videos. We also updated COVID-19 testing content. Google AdWords is used to track website traffic.

TABLE 23: Website use						
Website Use	Before Current Grant	Yr. 1 Total 9/1/19 - 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Current Grant Total 9/1/19 - 8/31/21	Cumulative totals
Screening applications submitted via website	202	105	17	70	175	377
Contact CARD emails via website	433	106	29	142	248	681
# of website sessions	103,871	9,441	12,065	30,261	39,702	143,573
# pages viewed	252,023	17,299	14,591	40,293	57,592	309,615
session length 30+ minutes	1,398	47	9	41	88	1,486
session length 10-30 minutes	13,642	363	90	323	686	14,328
session length 3-10 minutes	29,537	490	184	592	1,082	30,619
session length 1-3 minutes	21,664	567	295	926	1,493	23,157
session length 31-60 seconds	9,413	367	208	643	1,010	10,423
session length 11-30 seconds	12,448	370	272	885	1,255	13,703
session less than 10 seconds	bounce factor	7,237	11,007	26,851	34,088	34,088
Page depth: 1-9 Pages viewed in se	25,499	10,200	14,205	32,265	42,465	67,964
10-14 Pages viewed in session	1,709	348	23	114	462	2,171
15-19 Pages viewed in session	614	175	4	26	201	815
20+ Pages viewed in session	734	253	2	25	278	1,012
# of users	39,074	8,782	11,415	27,109	35,891	74,965
new users	not cumulative, reported as a percentage	not cumulative, reported as a percentage	94%	not cumulative, reported as a percentage	not cumulative, reported as a percentage	not cumulative, reported as a percentage
returning users			6%			
Male users			48%			
Female users			52%			
Age between 18-24			11%			
Age between 25-34			22%			
Age between 35-44			19%			
Age between 45-54			18%			
Age between 55-64			19%			
Age 65+			11%			

Social Media and other outreach efforts:

In addition to the above outreach and education, CARD had been working to increase our social media presence on both Facebook and Instagram. Our Facebook page which reaches local, regional, national, and international audiences has had 35 posts during this reporting period. These posts generated the following numbers: 15,141 total people reached, 1,637 post engagements. We currently have 2,700 followers on our Facebook page, and 140 followers on Instagram. Our Instagram page had a total of 18 posts during this reporting period. These posts reached 897 accounts, generating 63 likes. In addition, each week during the quarter an outreach or education video was released on our YouTube channel. This will continue thorughout 2021.

CARD Annual Rally:

TABLE 20: CARD RALLY					
	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 4 6/1/21 - 8/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# students present	840	268	120	120	1,228
# adults present	340	104	53	53	497

CARD's annual Rally was not held last fall as usual due to COVID precautions. The event was instead held on June 5 from noon to 4 pm outdoors in conjunttion with Kiwanis's family day in the park. The collaboration provided opportunites for numerous organizations to provide outreach and education to local children and their families. The booths were themed around PJ Masks characters and included identification of vermicultie hosted by the Lincoln County Asbestos Resource Program, hand washing hosted by Lincoln County Public Health, exercise hosted by 0-5 (a group that works to meet the needs of families with young children up to five years old), germ transmission hosted by Cabinet Peaks Medical Center, smoking and vaping prevention hosted by CARD and the Health Department, and cleanliness and sanitizing hosted by

CARD. The annual Rally event was an excellent way to engage local youth and their families in education about asbestos related disease and other important health topics. Upon completion of all booth activities, prizes or other useful items such as mini first aid kits with CARD Screening information were offered.

Below are some photos of CARD's Rally activities from quarter 4:
Left: Learning about the importance of exercise
Right: Learning about proper hand washing techniques

CHALLENGES:
REASON FOR DELAY AND ANTICIPATED CORRECTIVE ACTION OR DELETION

Loss of Information Technology employee:
In July, CARD's Information Technology (IT) Specialist left the organization to take a new position. Recruitment was attempted but no one with the necessary knowledge and experience applied. CARD made the decision to outsource IT so that our needs would be met in a timely manner. We are working with a company called Montana Technical Solutions or MTS, and to date, the transition has worked well and there has been no interruption in our ability to carry out grant activities.

COVID-19 impacts:
During quarter 4, Lincoln County Montana has experienced a surge in COVID-19 cases which are currently higher than at any other point in the pandemic to date. On Monday, September 20, 2021 there were 62 new cases reported, 335 active cases, 34 current hospitalizations, and 44 deaths had already occurred in the community. The screening programs continued to be impacted by COVID-19 with a decrease in the number of patients seen. This decrease was related to both restrictions such as social distancing, and to patient cancellations due to concern over the virus. In addition, CARD's pulmonary function labs were closed for part of the quarter but they opened back up and patient numbers also began to increase prior to the current surge. CARD installed equipment to convert our labs into negative pressure rooms to more effectively prevent the spread of infectious contaminants such as COVID-19 and implemented rapid COVID testing as well. CARD began to recall screening participants this quarter and also sent out post cards to area residents about screening. In a satisfaction survey received on July 13, one patient wrote, "I was happy that a rapid COVID test was done and all the improvements to the pulmonary testing

room made for safety." Temperature checks for vaccinated staff were discontinued at the end of June but restarted with the recent surge toward the end of the grant year. Every screening participant is asked if they are vaccinated, educated about vaccines, and offered to assist with scheduling a vaccination appointment if desired.

STATUS OF PROGRAM, SCREENING, INFRASTRUCTURE, AND STAFF

The grant's goals and objectives were implemented successfully even with the ongoing COVID-19 pandemic during the last quarter of year 2. A significant organizational structure transition was implemented at the CARD Clinic during quarters 3 and 4 with Dr. Black, the clinic's previous CEO and Medical Director moving into a part time advisory role. Dr. Morrissette became Medical Director, and Tracy McNew became Executive Director. In addition, Joe Joslyn, the newly hired Physician Assistant submitted his intent to resign at the end of the quarter due to an inability to find acceptable housing in the Libby area. Despite these changes, CARD's infrastructure remains solid with a strong administrative and implementation team. Quality assurance processes remain successfully in place for delivery of ARD and LCS screening activities, data management, outreach and educational activities. Completeness and accuracy of the database is evident by consistency of data reported across multiple tables. All data is quality controlled for accuracy before reports and table outcomes are generated. All screening CT scans are read by a qualified physician, so CARD's physicians read all CT images ordered by our physician assistant.

MEASURES OF EFFECTIVENESS

Measures of effectiveness were reported under each specific goal above. CARD added a new effective measure with patient satisfaction surveys this year as well. In addition to what was reported above, the following is an example of specific feedback received from a patient this quarter:

- "The hospital was running late on the x-ray because of an emergency. The clinic and staff made me feel very comfortable and not rushed despite the delay."
- "Everyone was very professional, thorough and explained all test and procedures to my ability and knowledge to understand."
- "Prompt, friendly, informative explanation of procedures for clarity."
- "I felt everything went very smoothly. Staff was friendly and efficient. Great communication and friendly, knowledgeable staff."
- "Everyone was so kind and helpful. They made me feel comfortable and they were very knowledgeable."

Wednesday, July 21 at a special event kid's corner at the Farmer's market in Libby CARD partnered with other local entities to provide outreach and education to adults and families and healthy entertainment for children. Another event was held on August 18 where lung health and identification of vermiculite were shared.

FINANCIAL RECAP OF GRANT EXPENDITURES

As of Sept. 30, 2021, the grant funds for year 02 were expended in the amount of $2,063,346.66 (83%) of the total grant award for year 02 which was $2,499,974.00. A redirect of funds was submitted on August 11 and a review is still in progress in GrantSolutions.gov. In addition, a carryover of funds was also requested to enhance data management for the screening program. It is anticipated that all grant money will be spent pending the approval of these requests. We also anticipate that more bills will come in expending additional funds from outside readers.