Libby Montana's Public Health Emergency, Asbestos Health Screening
Center for Asbestos Related Disease
Grant Number 6 NU61TS000295-01-01
Year 2, Quarter 3
(March 1, 2020 through May 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 the first three 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 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 1: 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. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# ARD screenings	6,563	599	102	279	7,441
# CT diagnostic appointments	4,229	307	57	156	4,692
# ARD diagnosed	2,552	143	20	55	2,750
# ARD Medicare eligible	2,880	166	25	67	3,113
% diagnosed w/ environmental exposure only	not collected	85%	80%	85%	85%

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 2 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. 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 (40% 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 three, 259 past screening participants were seen for ARD follow-up.

TABLE 2: 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. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# screenings	6,563	599	102	279	7,441
# new screening patients	4,806	252	41	120	5,178
# rescreenings	1,757	347	61	159	2,263
# Lincoln County, MT residents	3,366	310	58	145	3,821
# LDS eligible screenings done in clinic	2,679	114	15	51	2,844
# of LDS patients	519	125	19	54	698
# in clinic appointments (includes both visits)	9,445	680	119	318	10,443
#LDS appointments (includes both visits)	1,347	226	40	117	1,690
Consented for TAR registry	5,015	483	71	201	5,699
Consented to notify PCP of screening results	not collected	479	69	197	not collected
# past screeners diagosed with ARD seen for f/u	not collected	2550	259	777	not collected

Table 3 details demographic data related to age and gender of the screening population.

TABLE 3: 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. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# screenings	6,563	599	102	279	7,441
# females	3,448	355	58	165	3,968
# males	3,115	244	44	114	3,473
# under age 35	351	27	5	16	394
# between 35-49	1,289	116	21	54	1,459
# between 50-64	3,279	294	51	137	3,710
# age 65+	1,644	162	25	72	1,878

Table 4 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 for this grant, we've added the number with abnormal body mass index (BMI) as well. 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 for those to whom it could be made

available under COVID restrictions. 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. 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 4: 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. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# screenings	6,563	599	102	279	7,441
# symptomatic	4,408	381	69	178	4,967
# abnormal spirometry	1,699	171	25	45	1,915
# abnormal BMI (≥30)	not collected	248	38	96	not collected
# CXRs completed	6,361	592	102	277	7,230
# no CXR done	202	7	0	2	211
# abnormal CXR (CARD)	394	17	2	3	414
pleural only	356	15	0	2	373
interstitial only	19	1	1	0	20
both	19	1	1	1	21
# CTs completed	4,229	307	57	156	4,692
# abnormal CT (CARD)	2,525	143	20	54	2,722
pleural only	1,988	122	18	45	2,155
interstitial only	12	5	0	0	17
both	525	16	2	9	550

Table 5 describes significant findings of ARD screening. These findings include focal opacities, masses, and confirmed cancers. In addition, data is now being 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 5: 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. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# lung masses	57	6	2	5	68
# thyroid masses	22	0	0	0	22
# kidney masses	23	0	0	0	23
# breast masses	19	1	0	1	21
# other masses	52	1	0	2	55
Total # masses identified	173	8	2	8	189
# focal opacities	1,123	159	4	78	1360
# cancers verified possibly asbestos related	not collected	14	0	12	not collected
# participants w/ incidental findings	not collected	252	39	136	not collected
# specialist referrals	not collected	3	0	0	not collected
# depression follow-ups completed	not collected	190	31	96	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. Sixteen of 31 FOBTs given (52%) in quarter 3 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 6: 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. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# FOBTs given	2,223	204	31	88	2,515
# FOBTs returned	846	102	16	48	996
# FOBTs abnormal	4	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 7: 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. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# CXRs	6,361	592	102	277	7,230
# B reads	6,313	592	37	241	7,146
# B reads abnormal	551	32	2	11	594
Pleural	452	26	1	7	485
Interstitial	73	4	1	4	81
Both	26	2	0	0	28
# CTs	4,229	307	57	156	4,692
# Outside CT reads	4,163	307	40	139	4,609
# Outside CT reads abnormal	1,453	56	5	18	1,527
Pleural only	797	17	2	8	822
Interstitial only	370	33	2	8	411
Both	286	6	1	2	294

Quality control panel readings of radiographs and HRCT scans:

Twice annually, peer review sessions are held as a quality control measure. The first peer review comparison phone call discussion of year 2 was held during quarter 2 and the second one will be held in quarter 4. Post peer review comparison analysis is completed for each session by Dr. Curtis Noonan, CARD's contracted epidemiologist.

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 8 do not include lung cancers identified through the asbestos related disease screening program. 24% 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 8: 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. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# completed LDCTs	3,008	524	111	341	3,873
# new LCS participants	not collected	65	18	36	not collected
# of established participants	not collected	449	93	305	not collected
# less than annual f/u	not collected	52	21	53	not collected
# referrals	not collected	12	3	7	not collected
# confirmed cancers	29	3	0	4	36
# other findings	not collected	1	1	1	not collected
# current smokers	not collected	114	27	85	not collected
# no longer participating	not collected	33	6	20	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 9 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 9: 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. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
Established LDCT participants	478	445	93	305	1228
Participated 2-4 consecutive years	283	238	35	135	656
Participated 5-8 consecutive years	141	161	24	102	404
Rescreened but not consecutive years	54	46	34	68	168

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 10 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 10: ANA Results	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# ANA tests completed	not collected	424	77	211	not collected
# Abnormal ANA	not collected	93	11	46	not collected
# Abnormal ANA requiring f/u	not collected	23	8	15	not collected
% Postive ANA not diagnosed	not collected	not collected	57% (4 of 7)	not collected	not collected

ANA interpretation by Dr. Pfau

This third quarter screening group for the 2020/2021 grant year continues with trends reported previously for Libby, by presenting with a high frequency of positive ANA tests and of autoimmune diagnoses. However, this group had 4 cases of RA, 2 cases of lupus, one case of Sjogren's Syndrome and one of scleroderma. These cases reflect frequencies above expected within this Quarter's screening group, and were four 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 (59.8%), 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.

References

Brady, D.M. 2016. Fibromyalgia Misdiagnosis: What else could it be? Integrative Practitioner https://www.integrativepractitioner.com/practice-management/news/fibromyalgia-misdiagnosis-what-else-could-it-be

Diegel, R., B. Black, J.C. Pfau, T. McNew, C. Noonan, R. Flores. 2019. Case series: Rheumatological manifestations attributed to exposure to Libby Asbestiform Amphiboles. Jrnl Tox Env Health, Part A 81(15):734-747.
McBratney, S. 2020. Fibromyalgia Facts. Healthgrades. https://www.healthgrades.com/right-care/fibromyalgia/fibromyalgia-facts
Pfau, J.C., T. McNew, K. Hanley, L. Swan, B. Black. 2019. Autoimmune markers for progression of Libby amphibole lamellar pleural thickening. Inhal Tox 31(11-12):409-419.
Pfau, J.C., K. Serve, L. Woods, C. Noonan. 2016. Asbestos Exposure and Autoimmunity. Chapter 10 in Biological Effects of Fibrous and Particulate Substances, T. Otsuki, Editor. Springer Japan. P. 181 – 194.
Pfau, J.C., J.J. Sentissi, G. Weller, E.A. Putnam. 2005. Assessment of Autoimmune Responses Associated with Asbestos Exposure in Libby, Montana, USA. Environ. Health Perspectives, 113:25-30.
Ryan, P.H., C.H. Rice, J.E. Lockey, B. Black, J. Burkle, T.J. Hilbert, L. Levin, C. Brokamp, R. McKay, C. Wolfe, G.K. LeMasters. 2017. Childhood exposure to Libby amphibole asbestos and respiratory health in young adults. Environmental Research, 158:470-479.

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. Community education about smoking prevention and cessation has been added to this table.

TABLE 11: 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. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 5/31/21	Cumulative totals
# of screeners who smoked	706	98	19	51	855
# who quite since last screening appointment	50	8	1	3	61
# brief cessation ed by medical staff	395	77	3	24	496
# booklets mailed regionally/nationally	not collected	32	0	18	not collected
# booklets given in clinc/local	not collected	154	14	85	not collected
# individual follow up smoking cessation sessions	not collected	64	13	32	not collected
# engaged in ongoing counseling	47	17	0	5	69
community members educated re: smoking cessation/prevention	not collected	523	54	254	not collected

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 12 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 12: 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. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# of EHHs completed	3,263	118	27	60	3,441
# of EHHs for people over 65	1,101	39	13	23	1,163
# of EHHs for people under 65	2,162	71	14	29	2,262
# who have improved access to medical care for chronic conditions	716	34	5	12	762

Table 13 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 13 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 13: 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. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# enrolled in Medicare Pilot	1,728	50	5	18	1,796
# **screening** participants enrolled in Pilot after diagnosis	672	5	2	2	679
# of paid Pilot claims	not collected	7,658	1,518	4,950	12,608
# Pilot related encounters (face to face, email, phone call, education)	not collected	1,007	273	754	1,761
# Pilot approved service authorizations processed	not collected	750	159	477	1,227
# community Pilot education	not collected	95	8,100	10,465	10,560

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. 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 higher than the number of participants who completed screening.

TABLE 14: 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. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# answered the question	3,150	409	105	256	3,815
# LDS	643	97	22	69	809
# in clinic	2,507	369	84	188	3,064
Medical concerns	1,382	98	20	43	1,523
Family member diagnosed	739	91	10	24	854
Access to Benefits	268	19	0	2	289
Support research	316	20	3	5	341
Legal reasons	54	7	0	0	61
Screening purposes/multiple	280	170	72	180	630
Employer Requested Screening	111	1	1	3	115

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 15 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 15: 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. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
IC- # who answered	3,213	315	84	188	3,716
IC- traditional advertising (radio, TV, newspaper)	1,548	149	36	217	1,914
IC- website/social media	0	36	34	96	132
IC- Community networking (parades, local events)	1,329	123	14	183	1,635
LD- # who answered	600	97	22	166	863
LD- traditional advertising (radio, TV, newspaper)	244	27	18	48	319
LD- website/social media	44	29	1	34	107
LD- Community networking (events, word of mouth)	312	41	3	83	436

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. Twenty-four 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.

TABLE 16: SCREENING SATISFACTION SURVEY RESULTS

	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# surveys sent	not collected	not collected	102	278	not collected
# surveys returned	not collected	not collected	24	65	not collected
overall: excellent	not collected	not collected	16	46	not collected
overall: good or very good	not collected	not collected	4	14	not collected
overall: fair or poor	not collected	not collected	0	1	not collected
staff: excellent	not collected	not collected	3	31	not collected
staff: good or very good	not collected	not collected	1	14	not collected
staff: fair or poor	not collected	not collected	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 a number of 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 17 details local outreach and education efforts which have begun to pick back up in quarter three with the availability of vaccines and declining COVID-19 cases. The local events sponsored during quarter 3 included Libby's high school senior event, Kootenai River Stampede, The Heritage Museum, VFW flag program, Lil' Anglers Fishing Derby, Libby Loggers Baseball, Libby Chamber 5K run, Ignite the Nites, and the Farmers Market at Libby. Community meetings attended included Rotary, Kiwanis, Lincoln County Health Alliance, Libby Chamber of Commerce, and Communities that Care. Education articles in newspapers included allergy season, exercise and lung health, and an update on CARD with changing roles and organizational structure. CARD was also able to sign up as a non-selling vendor the Farmer's Market at Libby which is held on Thursday afternoons. A table will be set up with information about CARD Screening each week and a staff member will provide education to market goers. Google AdWords was used to provide outreach and education electronically. 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. Patient education website visits are the total web visits to all web pages that contain patient education information. Provider education is the same but with provider education information.

TABLE 17: 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. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
Local newspaper ads	598	157	16	87	842
Education article in newspapers	47	12	3	9	68
Health Link and Health Resource Guide	10	2	0	0	12
Radio ads	9,500	4,661	250	768	14,929
TV ads	8,236	422	0	0	8,658
Educational brochures given (screening, LCS, CARD)	443	298	216	1,047	1,788
Patient Education booklets	3,452	310	58	145	3,907
Parades	36	2	0	0	38
Community events sponsored	140	45	11	16	201
Commmunity meetings	218	77	19	58	353
Google AdWords Impressions	not collected	10,951	2,945	11,736	not collected
Google AdWords Clicks	not collected	771	244	1,558	not collected
Website visits	not collected	1,705	1,099	3,082	not collected
Website visits to patient education pages	not collected	624	86	346	not collected
community presentations/ events attended	76	17	12	27	120
website visits to provider education pages	not collected	207	38	152	not collected
newsletters sent locally	not collected	8,143	3,110	7,740	not collected

Table 18 details regional and national outreach and education efforts. YouTube channel numbers are a count of how many times our videos were viewed.

TABLE 18: 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. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
Newspaper -outreach	76	68	12	51	195
Radio ads -outreach	10,242	755	0	0	10,997
TV ads -outreach	8,236	21,888	9,937	27,582	57,706
Website -outreach	not collected	17,299	12,132	25,702	not collected
Website -patient education	not collected	2,411	785	2,060	not collected
Website -provider education	not collected	744	221	642	not collected
Google AdWords Impressions- outreach	not collected	53,850	111,044	130,015	not collected
Google AdWords Clicks- outreach	not collected	3,165	6,591	10,345	not collected
Educational brochures given (screening, tobacco, LDS)	not collected	119	122	122	not collected
YouTube Channel	14,100	2,822	870	2,473	19,395
Patient Education booklets - education	3,298	277	34	112	3,687
Lung cancer screening brochures - education	180	64	29	70	314
Health promotion events sponsored -outreach	36	5	10	10	51
Newsletters sent	not collected	7,434	3,677	7,078	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 nineteen letters sent to specific providers with shared patients regarding the patients' specific needs related to findings during their CARD appointments. The Big Sky Pulmonary Conference was held March 5-6, and Dr. Lee Morrissette was in attendance and presented "ARD in Libby, MT" to 207 participants. The conference is attended by healthcare professionals including Respiratory Therapists, Physician Assistants, Nurses and Nurse Practitioners and physicians from primary care and related specialties. Also in March, a Webinar was provided to 19 attendees at the University of Montana School of Public Health, and education was provided to Libby-area homecare agencies including Addus, Home Options, and Cabinet Mountain Home Care. 14 new medical providers were added to CARD's mailing list and a press release was sent out regarding CARD's safety upgrades related to COVID-19.

TABLE 19: TARGETED OUTREACH TO- HEALTHCARE PROFESSIONALS					
Method	Before Current Grant	Yr. 1 Total 9/1/19 - 8/31/20	Yr. 2 Q. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
Website -provider education	not collected	744	0	330	not collected
Mailings	not collected	121	19	49	not collected
CARD newsletter -education	27,948	1,056	575	1,414	30,418
provider education book mailed	1,351	271	28	84	1,706
Professional Conferences - education/outreach	45	3	5	9	57
Medical professionals -education	188	46	226	264	498
Press release pick ups	not collected	228	141	320	not collected
other targeted outreach efforts	not collected	301	13	22	not collected

Website Use:

CARD's website is an important tool for outreach, education, and communication with target populations. Table 20 summarizes use of CARD's website during quarter 3. 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. Google AdWords is used to track website traffic.

TABLE 20: Website use

Website Use	Before Current Grant	Yr. 1 Total 9/1/19 - 8/31/20	Yr. 2 Q. 3 3/1/21 - 5/31/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
Screening applications submitted via website	202	105	13	53	360
Contact CARD emails via website	433	106	48	113	652
# of website sessions	103,871	9,441	9,005	18,196	131,508
# pages viewed	252,023	17,299	12,132	25,702	295,024
session length 30+ minutes	1,398	47	9	32	1,477
session length 10-30 minutes	13,642	363	104	233	14,238
session length 3-10 minutes	29,537	490	198	408	30,435
session length 1-3 minutes	21,664	567	299	631	22,862
session length 31-60 seconds	9,413	367	219	435	10,215
session length 11-30 seconds	12,448	370	302	613	13,431
session less than 10 seconds	bounce factor	7,237	7,874	15,844	23,081
Page depth: 1-9 Pages viewed in se	25,499	10,200	8,958	18,060	53,759
10-14 Pages viewed in session	1,709	348	33	91	2,148
15-19 Pages viewed in session	614	175	8	22	811
20+ Pages viewed in session	734	253	6	23	1,010
# of users	39,074	8,782	8,163	15,694	63,550
new users	not collected	not cumulative, reported as a percentage	99%	not cumulative, reported as a percenage	not cumulative, reported as a percentage
returning users	not collected		1%		
Male users	not collected		46%		
Female users	not collected		54%		
Age between 18-24	not collected		11%		
Age between 25-34	not collected		21%		
Age between 35-44	not collected		19%		
Age between 45-54	not collected		19%		
Age between 55-64	not collected		17%		
Age 65+	not collected		13%		

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, national, and even international audiences had 37 posts during this reporting period. These posts reached 21,358 total people with 3,304 post engagements. We have 2,700 followers on Facebook and 130 followers on Instagram. Our Instagram page had a total of 13 posts during this reporting period that reached 720 accounts and generaged 71 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 registered to be a Montana COVID-19 vaccine provider and has been actively participating in free vaccination clinics during which we give away screening information and take away items. These clincs are an excellent way to provide positive outreach while improving the health of our community. At one vaccine clinic on April 8, 42 screening applications were distributed.

CARD Annual Rally:

CARD's annual Rally was not held this fall as usual due to COVID precautions. The event is usually held in coordination with the public school, but schools have been taking significant precautions including the cancellation of all extra curricular activities, offering and sometimes mandating at-home learning, and when in person having smaller groups that stay together. The annual Rally was held on June 5th outdoors in conjunction with our Kiwanis club's Family Day in the Park event. The annual Rally event is 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 booths, prizes or other useful items such as mini first aid kits with CARD Screening information will be offered.

CHALLENGES:
REASON FOR DELAY AND ANTICIPATED CORRECTIVE ACTION OR DELETION

Transition of roles and structure of CARD:
During quarter 3, Dr. Brad Black, CARD's CEO and Medical Director chose to move towards partial retirement. He stepped down as CEO and Medical Director and transitioned into a new part-time role as Senior Medical and Research Advisor. He will no longer be seeing any patients after August and his prior roles are transitioning to other staff members. Dr. Lee Morrissette has transitioned into the Medical Director role and Tracy McNew has transitioned into the Executive Director role. To date the transition has been seamless.

COVID-19 impacts:
During quarter 3, 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. CARD installed equipment to convert our labs into negative pressure rooms to more effectively prevent the spread of infectious contaminants such as COVID-19. All COVID precautions reported in quarter 1 remained in effect for quarters 2 and 3. CARD began to recall screening participants this quarter and plans to send out post cards to area residents about screening during quarter 04.

STATUS OF PROGRAM, SCREENING, INFRASTRUCTURE, AND STAFF

The grant's goals and objectives were implemented successfully even with COVID-19 restrictions during the third quarter of year 02. A significant organizational structure change at the CARD Clinic was made in quarter 3 as described above. CARD's infrastructure remains solid with a strong administrative and implementation team, our Medical Director and two physician assistants now contribute to the success of the grant. 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:

- "I was very pleased. I inquired on how to access the Pilot Program for services and was immediately seen by Stephanie Shaw. She was most helpful and answered the questions on how to proceed." 4/19/2021

FINANCIAL RECAP OF GRANT EXPENDITURES

At the end of the third quarter of year 02, the grant was expended in the amount of $1,125,026.09 (45%) of the total grant award for year 02 which was $2,499,974.00. It is anticipated that more bills will come in expending additional funds from outside readers, but the amount spent will remain less than what was budgeted due to CARD's closure of pulmonary function labs and slowdown during the COVID-19 pandemic. During quarter three CARD saw improved numbers and increased expenditures as COVID-19 numbers fell and vaccines became available.

Below are some photos of CARD Screening related activities from quarter 3:
Left: CARD's booth at the Farmer's Market on May 6
Right: a community member who found a painted rock on April 23