

**Libby Montana’s Public Health Emergency, Asbestos Health Screening
Center for Asbestos Related Disease
Grant Number 6 NU61TS000295-01-01
Year 2, Quarter 2
(December 1, 2020 through February 28, 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 and second 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	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 2 12/1/20- 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# ARD screenings	6,563	599	86	176	7,338
# CT diagnostic appointments	4,229	307	35	83	4,619
# ARD diagnosed	2,552	143	13	29	2,724
# ARD Medicare eligible	2,880	166	14	34	3,080
% diagnosed w/ environmental exposure only	not collected	85%	85%	1.73	3

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 were again significantly reduced from past quarters due to the pandemic which is discussed in more detail under the challenges section of this report. 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 (43% 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 promoted 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 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.

Appointment Type	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 2 12/1/20 - 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# screenings	6,563	599	86	176	7,338
# new screening patients	4,806	252	37	78	5,136
# rescreenings	1,757	347	49	98	2,202
# Lincoln County, MT residents	3,366	310	44	87	3,763
# LDS eligible screenings done in clinic	2,679	114	12	36	2,829
# of LDS patients	519	125	19	34	678
# in clinic appointments (includes both visits)	9,445	680	89	192	10,317
#LDS appointments (includes both visits)	1,347	226	32	67	1,640
Consented for TAR registry	5,015	483	54	125	5,623
Consented to notify PCP of screening results	not collected	479	60	121	600
# past screeners diagnosed with ARD seen for f/u	not collected	2550	196	518	3,068

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

Demographics	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 2 12/1/20 - 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# screenings	6,563	599	86	176	7,338
# females	3,448	355	56	106	3,909
# males	3,115	244	30	70	3,429
# under age 35	351	27	6	11	389
# between 35-49	1,289	116	17	33	1,438
# between 50-64	3,279	294	42	86	3,659
# age 65+	1,644	162	21	46	1,852

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, 69 of 86 (80%) of screening participants did not have a spirometry test due to pandemic precautions. In addition, rapid COVID testing was added to grant services to enable spirometry testing for those to whom it could be made available under this condition. 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, based on ATS criteria, 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. 2 12/1/20- 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals	
# screenings	6,563	599	86	176	7,338	
# symptomatic	4,408	381	57	108	4,897	
# abnormal spirometry	1,699	171	6	19	1,889	
# abnormal BMI (≥ 30)	not collected	248	28	56	304	
# CXRs completed	6,361	592	86	174	7,127	
# no CXR done	202	7	0	2	211	
# abnormal CXR (CARD)	394	17	0	1	412	
pleural only	356	15	0	1	372	
interstitial only	19	1	0	0	20	
both	19	1	0	0	20	
# CTs completed	4,229	307	35	83	4,619	
# abnormal CT (CARD)	2,525	143	13	28	2,696	
pleural only	1,988	122	9	22	2,132	
interstitial only	12	5	0	0	17	
both	525	16	4	6	547	

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.

Significant Findings	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 2 12/1/20 - 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# lung masses	57	6	2	2	65
# thyroid masses	22	0	0	0	22
# kidney masses	23	0	0	0	23
# breast masses	19	1	0	0	20
# other masses	52	1	2	2	55
Total # masses identified	173	8	4	4	185
# focal opacities	1,123	159	17	42	1324
# cancers verified possibly asbestos related	not collected	14	3	12	26
# participants w/ incidental findings	not collected	252	34	77	329
# specialist referrals	not collected	3	0	0	3
# depression follow-ups completed	not collected	190	16	65	255

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. Fifteen of 27 FOBTs given (55%) in quarter 2 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.

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. 2 12/1/20 - 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# FOBTs given	2,223	204	27	57	2,484
# FOBTs returned	846	102	15	28	976
# 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.

Outside Read Findings	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 2 12/1/20 - 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# CXRs	6,361	592	86	174	7,127
# B reads	6,313	592	53	104	7,009
# B reads abnormal	551	32	3	6	589
Pleural	452	26	2	4	482
Interstitial	73	4	1	2	79
Both	26	2	0	0	28
# CTs	4,229	307	35	83	4,619
# Outside CT reads	4,163	307	6	37	4,507
# Outside CT reads abnormal	1,453	56	0	5	1,514
Pleural only	797	17	0	2	816
Interstitial only	370	33	0	2	405
Both	286	6	0	1	293

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 in December. Post peer review comparison analysis was completed by Dr. Curtis Noonan, CARD's contracted epidemiologist. For CXR, 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. 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, 1st peer review

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	37 (13.7%)	--	--	0.483
Parenchymal Only	8 (3.0%)	--	--	0.549
Both Positive	1 (0.4%)	--	--	--
Both Negative	224 (83%)	--	--	0.555
Overall	265 (100%)	0.479	0.483	0.518

* Five repeats of 54 CXR studies.

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	15 (20.8%)	--	--	0.411
Parenchymal Only	9 (12.5%)	--	--	0.746
Both Positive	0 (0%)	--	--	--
Both Negative	48 (66.7%)	--	--	0.500
Overall	72 (100%)	0.411	0.746	0.524

* Three repeat reads of 24 CT studies.

KAPPA VALUE INTERPRETATION	
Kappa Values	Degree of Agreement
<=0	Poor
0 - 0.2	Slight
0.2 - 0.4	Fair
0.4 - 0.6	Moderate
0.6 - 0.8	Substantial
0.8 - 1	Almost Perfect

References

Fleiss, J.L. (2003), Statistical Methods for Rates and Proportions, Third Edition. New York: John Wiley & Sons, Inc.

Fleiss, J.L., Nee, J.C.M, and Landis, J.R. (1979), "Large Sample Variance of Kappa in the Case of Different Sets of Raters," Psychological Bulletin, 86(5), 974-977.

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. 28% 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 and/or by the CARD medical provider when 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.

Lung Cancer Screening	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 2 12/1/20- 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# completed LDCTs	3,008	524	102	230	3,762
# new LCS participants	not collected	65	9	18	83
# of established participants	not collected	449	93	212	661
# less than annual f/u	not collected	52	13	32	84
# referrals	not collected	12	3	4	16
# confirmed cancers	29	3	1	4	36
# other findings	not collected	1	0	0	1
# current smokers	not collected	114	29	58	172
# no longer participating	not collected	33	9	14	47

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. 2 12/1/20- 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
Established LDCT participants	478	445	93	212	1135
Participated 2-4 consecutive years	283	238	44	100	621
Participated 5-8 consecutive years	141	161	28	78	380
Rescreened but not consecutive years	54	46	21	34	134

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. 2 12/1/20- 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# ANA tests completed	not collected	424	63	134	not collected
# Abnormal ANA	not collected	93	19	35	not collected
# Abnormal ANA requiring f/u	not collected	23	2	7	not collected

ANA interpretation by Dr. Pfau:

This second 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 1 case of Sjogren's Syndrome, and no reported cases of lupus, sarcoidosis, or scleroderma, which were three 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. This screening group has a very high frequency of autoimmune symptoms (61.7%), 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

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

	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 2 12/1/20 - 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
Smoking Cessation					
# of screeners who smoked	706	98	13	32	836
# who quite since last screening appointment	50	8	1	2	60
# brief cessation ed by medical staff	395	77	12	21	493
# booklets mailed regionally/nationally	not collected	32	7	18	50
# booklets given in clinic/local	not collected	154	25	71	225
# individual follow up smoking cessation sessions	not collected	64	10	19	83
# engaged in ongoing counseling	47	17	1	5	69
community members educated re: smoking cessation/prevention	not collected	523	25	200	723

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.

Certain Medicare Benefits	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 2 12/1/20 - 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# of EHHs completed	3,263	118	15	33	3,414
# of EHHs for people over 65	1,101	39	3	10	1,150
# of EHHs for people under 65	2,162	71	4	15	2,248
# who have improved access to medical care for chronic conditions	716	34	2	7	757

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. In addition to the numbers reported in the table below, during this quarter, 180 MPPARD beneficiaries completed health exams related to annual and ongoing disease monitoring.

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. 2 12/1/20 - 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# enrolled in Medicare Pilot	1,728	50	3	13	1,791
# screening participants enrolled in Pilot after diagnosis	672	5	0	0	677
# of paid Pilot claims	not collected	7,658	1,427	3,432	11,090
# Pilot related encounters (face to face, email, phone call, education)	not collected	1,007	344	481	1,488
# Pilot approved service authorizations processed	not collected	750	160	318	1,068
# community Pilot education	not collected	95	2,190	2,365	2,460

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.

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. 2 12/1/20 - 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# answered the question	3,150	409	74	151	3,710
# LDS	643	97	24	47	787
# in clinic	2,507	369	50	104	2,980
Medical concerns	1,382	98	12	23	1,503
Family member diagnosed	739	91	5	14	844
Access to Benefits	268	19	0	2	289
Support research	316	20	0	2	338
Legal reasons	54	7	0	0	61
Screening purposes/multiple	280	170	57	108	558
Employer Requested Screening	111	1	0	2	114

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.

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. 2 12/1/20 - 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
IC- # who answered	3,213	315	50	104	3,632
IC- traditional advertising (radio, TV, newspaper)	1,548	149	18	32	1,729
IC- website/social media	0	36	10	26	62
IC- Community networking (parades, local events)	1,329	123	22	46	1,498
LD- # who answered	600	97	24	47	744
LD- traditional advertising (radio, TV, newspaper)	244	27	1	3	274
LD- website/social media	44	29	0	4	77
LD- Community networking (events, word of mouth)	312	41	22	39	392

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.

	Before Current Grant 7/1/11-8/31/19	Yr. 1 total 9/1/19- 8/31/20	Yr. 2 Q. 2 12/1/20 - 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
# surveys sent	not collected	not collected	86	176	not collected
# surveys returned	not collected	not collected	21	41	not collected
overall: excellent	not collected	not collected	15	30	not collected
overall: good or very good	not collected	not collected	6	10	not collected
overall: fair or poor	not collected	not collected	0	1	not collected
staff: excellent	not collected	not collected	14	28	not collected
staff: good or very good	not collected	not collected	7	13	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 been reduced significantly due to cancellations related to the pandemic. The local event sponsored during quarter 2 was Libby Wrestling Club. Community meetings attended included Rotary, Kiwanis, and Communities that Care.

Another local outreach and education effort not accounted for in the table is giving away masks and hand sanitizers with CARD's screening logo to local clubs, teams, businesses, motels and more. Included with all give away items was a pamphlet about CARD Screening.

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. 2 12/1/20 - 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
Local newspaper ads	598	157	21	71	826
Education article in newspapers	47	12	3	6	65
Health Link and Health Resource Guide	10	2	0	0	12
Radio ads	9,500	4,661	256	518	14,679
TV ads	8,236	422	0	0	8,658
Educational brochures given (screening, LCS, CARD)	443	298	685	831	1,572
Patient Education booklets	3,452	310	44	87	3,849
Parades	36	2	0	0	38
Community events sponsored	140	45	1	5	190
Community meetings	218	77	17	39	334
Google AdWords Impressions	not collected	10,951	4,406	8,791	19,742
Google AdWords Clicks	not collected	771	726	1,314	2,085
Website visits	not collected	1,705	1,267	1,983	3,688
Website visits to patient education pages	not collected	624	118	260	884
community presentations/ events attended	76	17	8	15	108
website visits to provider education pages	not collected	207	27	114	321
newsletters sent locally	not collected	8,143	0	4,630	12,773

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. 2 12/1/20 - 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
Newspaper -outreach	76	68	17	39	183
Radio ads -outreach	10,242	755	0	0	10,997
TV ads -outreach	8,236	21,888	8,897	17,645	47,769
Website -outreach	not collected	17,299	8,037	13,570	30,869
Website -patient education	not collected	2,411	691	1,275	3,686
Website -provider education	not collected	744	178	421	1,165
Google AdWords Impressions- outreach	not collected	53,850	9,815	18,971	72,821
Google AdWords Clicks- outreach	not collected	3,165	2,092	3,754	6,919
Educational brochures given (screening, tobacco, LDS)	not collected	119	0	0	119
YouTube Channel	14,100	2,822	748	1,603	18,525
Patient Education booklets - education	3,298	277	31	78	3,653
Lung cancer screening brochures - education	180	64		32	276
Health promotion events sponsored -outreach	36	5	0	0	41
Newsletters sent	not collected	7,434	0	3,401	10,835

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 ten letters sent to specific providers with shared patients regarding the patients' specific needs related to findings during their CARD appointments.

TABLE 19: TARGETED OUTREACH TO- HEALTHCARE PROFESSIONALS					
Method	Before Current Grant	Yr. 1 Total 9/1/19 - 8/31/20	Yr. 2 Q. 2 12/1/20 - 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
Website -provider education	not collected	744	0	330	1,074
Mailings	not collected	121	10	30	151
CARD newsletter -education	27,948	1,056	0	839	29,843
provider education book mailed	1,351	271	26	56	1,678
Professional Conferences - education/outreach	45	3	0	4	52
Medical professionals -education	188	46	0	38	272
Press release pick ups	not collected	228	107	179	407
other targeted outreach efforts	not collected	301	8	9	310

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 2. Website materials are regularly updated and use is tracked to help improve content for users. Website updates this quarter included updating staff and board members as well as performing a monthly backup and plugin update site wide. Google AdWords is used to track website traffic.

Website Use	Before Current Grant	Yr. 1 Total 9/1/19 - 8/31/20	Yr. 2 Q. 2 12/1/20 - 2/28/21	Yr. 2 cumulative 9/1/20 - 2/28/21	Cumulative totals
Screening applications submitted via website	202	105	20	40	347
Contact CARD emails via website	433	106	41	65	604
# of website sessions	103,871	9,441	5,627	9,191	122,503
# pages viewed	252,023	17,299	8,037	13,570	282,892
session length 30+ minutes	1,398	47	16	23	1,468
session length 10-30 minutes	13,642	363	71	129	14,134
session length 3-10 minutes	29,537	490	99	210	30,237
session length 1-3 minutes	21,664	567	164	332	22,563
session length 31-60 seconds	9,413	367	111	216	9,996
session length 11-30 seconds	12,448	370	174	311	13,129
session less than 10 seconds	bounce factor	7,237	4,992	7,970	15,207
Page depth: 1-9 Pages viewed in session	25,499	10,200	5,580	9,102	44,801
10-14 Pages viewed in session	1,709	348	29	58	2,115
15-19 Pages viewed in session	614	175	5	14	803
20+ Pages viewed in session	734	253	13	17	1,004
# of users	39,074	8,782	4,274	7,531	55,387
new users	not collected	not cumulative, reported as a percentage	83%	not cumulative, reported as a percentage	not cumulative, reported as a percentage
returning users	not collected		17%		
Male users	not collected		47%		
Female users	not collected		53%		
Age between 18-24	not collected		12%		
Age between 25-34	not collected		22%		
Age between 35-44	not collected		19%		
Age between 45-54	not collected		16%		
Age between 55-64	not collected		18%		
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. In addition, beginning in January, a weekly outreach or education video was released on our YouTube channel. This will continue throughout 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 clinics are an excellent way to provide positive outreach while improving the health of our community.

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 is now planned for June 5th and it will be held 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

COVID-19 modifications:

During quarter 2, the screening programs continued to be impacted by COVID-19 with a decrease in the number of patient that could be 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 remained closed throughout the quarter in order to protect our patients and staff. Our decision to close the labs was made based on the surge in local cases and taking into consideration recommendations of the American Thoracic Society and other leaders in the field of respiratory medicine. Spirometry in particular can be dangerous for spreading the virus because the maneuver requires patients to blow air out hard and fast, and this of course, cannot be done while wearing a mask. The maneuver, by its nature, increases the likelihood of disease transmission and it takes 20 minutes or more for all of the potentially exhaled particles to settle so others in the area could be exposed afterwards. CARD has ordered equipment to convert our labs into negative pressure rooms which will much more effectively prevent the spread of infectious contaminants such as COVID-19. These rooms, once completed will use lower air pressure to suck outside air in and trap potentially harmful particles in the room by preventing air from leaving the space. This protects people outside of the rooms from any potential exposure. Twelve air-flow changes per hour along with built in HEPA filtration and UV sanitization will protect our spirometry techs and respiratory therapists working in the labs. Airflow will be directly to the outdoors, and room pressure will be monitored by a system outside of the sealed doors. Equipment installation was taking place at the end of quarter 2. All COVID precautions reported in quarter 1 remained in effect for quarter 2.

STATUS OF PROGRAM, SCREENING, INFRASTRUCTURE, AND STAFF

The grant's goals and objectives were implemented successfully even with COVID-19 restrictions during the second quarter of year 02, but unfortunately, they were done on a more limited basis as explained above. No significant staff changes were made in quarter 2. CARD's infrastructure remains solid with a strong administrative and implementation team, our Medical Director, a second physician, Dr. Lee, and a physician assistant, who all 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 are some examples of specific feedback received from patients this quarter:

- "They explained what was happening to me. Found an infection and got me stated on meds right away." 2/8/2021

- “Miles Miller was very interested and insightful for not only asbestos issues but also my general overall health. I felt he was genuinely concerned.” 1/4/2021

FINANCIAL RECAP OF GRANT EXPENDITURES

At the end of the second quarter of year 02, the grant was expended in the amount of \$704,891.54 (16%) 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. With new pulmonary function lab equipment being installed and vaccines being distributed, we are already seeing improved numbers and increasing expenditures for the second half of this grant year.