

**Libby Montana’s Public Health Emergency, Asbestos Health Screening
Center for Asbestos Related Disease
Grant Number 6 NU61TS000295-01**

Year 01

(September 1, 2019 through August 31, 2020)

MAJOR FINDINGS

The goal of the Funding Opportunity Announcement (FOA) is “early detection of certain medical conditions related to environmental health hazards.” The CARD 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. Significant outreach and education locally, regionally and nationally are also being conducted to support the screening programs as these activities are an important component for the success of the grant. The clinical data in this report includes the ARD and lung cancer screening programs. Outcomes reported are for year 01 (Sept. 1, 2019 through Aug. 31, 2020) and the cumulative totals that include all screening activities funded in prior grants (July 1, 2011 through Jun. 30, 2015 and Sept. 1, 2015 through Aug. 31, 2019) or covered by CARD’s general fund between grants in July and August of 2015.

Table 1 shows the number of screenings performed and rate of diagnosis for the past 9 years.

TABLE 1: SCREENING OUTCOMES							
	Before Current Grant 7/1/11 - 8/31/19	Yr.1 Q1 9/1/19-11/30/19	Yr. 1 Q2 12/1/19-2/29/20	Yr. 1 Q3 3/1/20-5/31/20	Yr. 1 Q4 6/1/20-9/30/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
Screening Rates							
# ARD Screening	6,563	186	161	109	143	599	7,162
# Diagnosed	2,552	36	39	27	41	143	2,695
Percent Diagnosed	39%	19%	24%	25%	29%	24%	38%

Table 2 reports screening outcomes including 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. It is noteworthy that individuals can be eligible for Medicare through the Environmental Health Hazard designation criteria, but not be clinically diagnosed with ARD by a CARD medical provider. This can occur when: (1) A screening chest x-ray B-read is read positive for asbestos related abnormalities. (2) A screening chest CT is read positive for asbestos related abnormalities by an outside radiologist on the B-reader panel. (3) The screening patient has a documented diagnosis of an asbestos related cancer as designated by Medicare on the Environmental Health Hazard checklist (mesothelioma, lung, colon, rectum, larynx, stomach, esophagus, pharynx or ovarian).

Numbers in this final report for year 01 include the most up to date and accurate information based on results from outside reads, patient follow-up visits, collection of missing paperwork, and making adjustments to the database to correct any past errors. Percent diagnosed with environmental exposure only does not include a cumulative total because it was not collected in prior grants but was added during year one of this grant.

Screening Outcomes	Before Current Grant 7/1/11- 8/31/19	Yr.1 Q1 9/1/19-11/30/19	Yr. 1 Q2 12/1/19-2/29/20	Yr. 1 Q3 3/1/20-5/31/20	Yr. 1 Q4 6/1/20-9/30/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
# ARD screenings	6,563	186	161	109	143	599	7,162
# CT diagnostic appointments	4,229	88	86	53	80	307	4,536
# ARD diagnosed	2,552	36	39	27	41	143	2,695
# ARD Medicare eligible	2,880	48	45	29	44	166	3,046
% diagnosed w/ environmental exposure only	not collected	86%	74%	85%	79%	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:

In the screening tables, other than table 3 below which describes types of screening appointments, both in Libby and long distance data are combined and summarized unless specifically stated in a line within the table.

It is noteworthy that only 599 screenings were completed during year 01. This is a decrease from past years as well as a decrease from what was originally budgeted. This decrease was related to the COVID-19 pandemic. CARD was forced to close for nearly six weeks along with many other businesses in the state and around the country during this time. Upon reopening precautions were implemented which limited the number of people seen in the clinic to facilitate social distancing and sanitization procedures. The number of new screenings also dropped to 42% (252) of the 599 screenings done in year 01. Historically, new screenings have accounted for over half of the screening program's participation. This change was also related to COVID-19 since rescreening appointments were prescheduled and took up more of the limited patient schedule slots than in previous years.

Another new metric that is being reported as part of this grant is the number of past screeners diagnosed with ARD seen for follow-up. This number relates to long-term impacts of the grant which leads to ongoing health monitoring and support for those diagnosed with ARD.

Appointment Type	Before Current Grant 7/1/11- 8/31/19	Yr.1 Q1 9/1/19-11/30/19	Yr. 1 Q2 12/1/19-2/29/20	Yr. 1 Q3 3/1/20-5/31/20	Yr. 1 Q4 6/1/20-9/30/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
# screenings	6,563	186	161	109	143	599	7,162
# new screening patients	4,806	59	71	50	72	252	5,058
# rescreenings	1,757	127	90	59	71	347	2,104
# Lincoln County, MT residents	3,366	86	89	63	72	310	3,676
# LDS eligible screenings done in clinic	2,679	45	15	10	44	114	2,793
# of LDS patients	519	36	48	27	14	125	644
# in clinic appointments (includes both visits)	9,445	214	168	115	183	680	10,125
#LDS appointments (includes both visits)	1,347	60	79	46	41	226	1,573
Consented for TAR registry	5,015	149	127	91	116	483	5,498
Consented to notify PCP of screening results	not collected	153	127	90	109	479	not collected
# past screeners diagnosed with ARD seen for f/u	not collected	683	590	465	812	2550	not collected

Table 4 summarizes demographic information for screening program participants.

Demographics	Before Current Grant 7/1/11- 8/31/19	Yr.1 Q1 9/1/19-11/30/19	Yr. 1 Q2 12/1/19-2/29/20	Yr. 1 Q3 3/1/20-5/31/20	Yr. 1 Q4 6/1/20-9/30/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
# screenings	6,563	186	161	109	143	599	7,162
# females	3,448	113	96	56	90	355	3,803
# males	3,115	73	65	53	53	244	3,359
# under age 35	351	6	7	1	13	27	378
# between 35-49	1,289	32	34	22	28	116	1,405
# between 50-64	3,279	86	80	55	73	294	3,573
# age 65+	1,644	62	40	31	29	162	1,806

In Table 5, clinical findings of ARD screening are summarized. The number of symptomatic participants refers to CARD's medical provider's documentation of patient reported respiratory symptoms that may be asbestos related. This information was used in clinical decision making to determine whether a CT scan should be performed. BMI recording was added in year 01 and not recorded previously.

CARD Clinical Findings	Before Current Grant 7/1/11-8/31/19	Yr.1 Q1 9/1/19-11/30/19	Yr. 1 Q2 12/1/19-2/29/20	Yr. 1 Q3 3/1/20-5/31/20	Yr. 1 Q4 6/1/20-9/30/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
# screenings	6,563	186	161	109	143	599	7,162
# symptomatic	4,408	106	108	68	99	381	4,789
# abnormal spirometry	1,699	47	48	37	39	171	1,870
# abnormal BMI (>30)	not collected	81	60	48	59	248	not collected
# CXRs completed	6,361	182	160	109	141	592	6,953
# no CXR done	202	4	1	0	2	7	209
# abnormal CXR (CARD)	394	7	5	2	3	17	411
pleural only	356	7	4	1	3	15	371
interstitial only	19	0	0	1	0	1	20
both	19	0	1	0	0	1	20
# CTs completed	4,229	88	86	53	80	307	4,536
# abnormal CT (CARD)	2,525	36	39	27	41	143	2,668
pleural only	1,988	27	38	21	36	122	2,110
interstitial only	12	1	0	3	1	5	17
both	525	8	1	3	4	16	541

In Table 6: Masses identified are reported instead of confirmed cancers. This is done because CARD refers patients with significant findings to specialists for appropriate follow-up, and it is not known whether a cancer diagnosis was made unless patients choose to share their medical records with CARD. Focal opacities are common in screening studies and their prevalence is well documented in literature. Only a small percentage of them turn out to be cancers, but they are tracked in our database so that we can follow them in future screenings or ongoing care if they were diagnosed with ARD. If the focal opacity is greater than 6 mm, the individual is between 55-84 years of age, and they have a 20 pack year smoking history, then they qualify for lung cancer screening. These criteria have been updated from prior grants which used 4 mm focal opacities as part of the lung cancer screening eligibility criteria rather than 6 mm. The update was made to remain consistent with updated Fleischner Society recommendations. Lung masses reported in this table do not include lung cancers identified through the lung cancer screening program. Also new to this grant are numbers collected on verified cancers, incidental findings, specialist referrals, and depression follow-ups. These are all important follow-up/outcome activities related to asbestos health screening.

Significant Findings	Before Current Grant 7/1/11-8/31/19	Yr.1 Q1 9/1/19-11/30/19	Yr. 1 Q2 12/1/19-2/29/20	Yr. 1 Q3 3/1/20-5/31/20	Yr. 1 Q4 6/1/20-9/30/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
# lung masses	57	2	2	2	0	6	63
# thyroid masses	22	0	0	0	0	0	22
# kidney masses	23	0	0	0	0	0	23
# breast masses	19	0	0	1	0	1	20
# other masses	52	0	0	1	0	1	53
Total # masses identified	173	2	2	4	0	8	181
# focal opacities	1,123	51	40	28	40	159	1,282
# cancers verified possibly asbestos related	not collected	8	4	0	2	14	not collected
# participants w/ incidental findings	not collected	13	8	45	52	252	not collected
# specialist referrals	not collected	1	1	1	0	3	not collected
# depression follow-ups completed	not collected	65	41	34	50	190	not collected

Fecal Occult Blood Testing:

Fecal occult blood testing (FOBT) was offered to all screening participants between the ages of 50-75. If a patient had regularly scheduled colonoscopies or was not interested in participating they declined the FOBT. Half of all FOBTs given were returned during year 01.

Fecal Occult Blood Tests	Before Current Grant 7/1/11-8/31/19	Yr.1 Q1 9/1/19-11/30/19	Yr. 1 Q2 12/1/19- 2/29/20	Yr. 1 Q3 3/1/20-5/31/20	Yr. 1 Q4 6/1/20-9/30/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
# FOBTs given	2,223	73	61	31	39	204	2,427
# FOBTs returned	846	43	26	19	14	102	948
# FOBTs abnormal	4	0	0	0	0	0	4

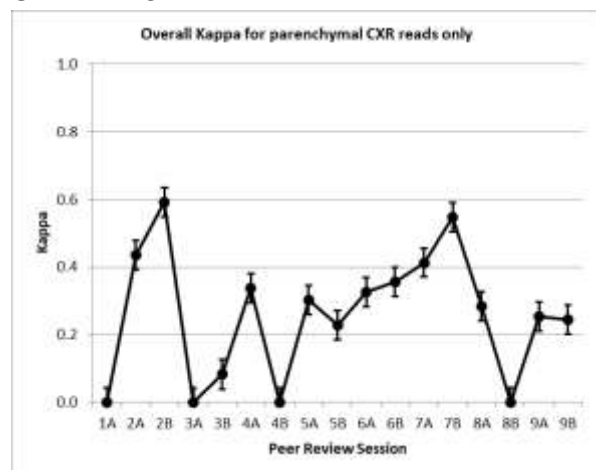
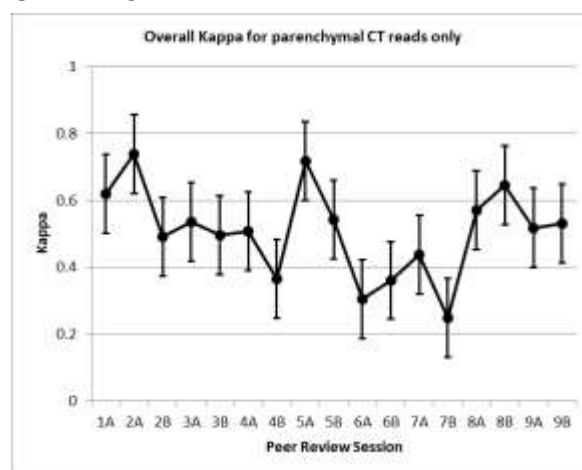
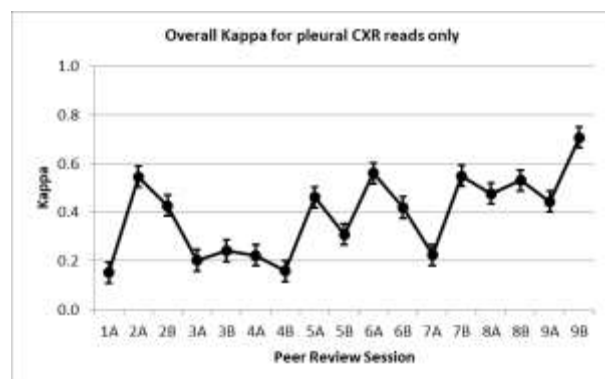
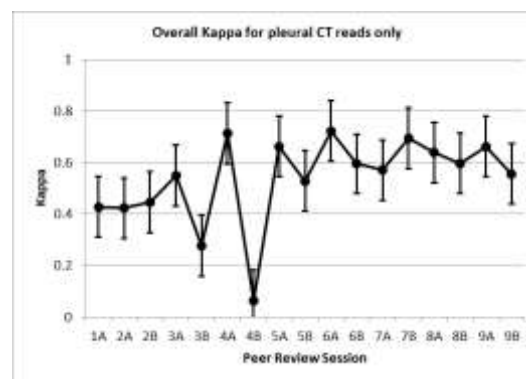
Outside Radiology Reads:

A group of five B-readers, three of which are radiologists, make up the outside reader panel. One reader from the panel over-reads every image taken as part of the screening program. Images are distributed to readers in a systematic cyclic process to ensure even workloads. Many images are read outside of the quarter that the images were performed in because they are burned to disk and mailed in groups then read and returned by mail from the outside readers. On average, it takes readers 7 weeks from the time images are mailed to outside readers for them to be returned to CARD. All reads of images done in grant year 01 have now been returned and added to the cumulative totals.

Outside Read Findings	Before Current Grant 7/1/11-8/31/19	Yr.1 Q1 9/1/19-11/30/19	Yr. 1 Q2 12/1/19-2/29/20	Yr. 1 Q3 3/1/20-5/31/20	Yr. 1 Q4 6/1/20-9/30/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
# CXRs	6,361	182	160	109	141	592	6,953
# B Reads	6,313	182	160	109	141	592	6,905
# B Reads abnormal	551	9	9	7	7	32	583
Pleural	452	8	7	6	5	26	478
Interstitial	73	1	1	1	1	4	77
Both	26	0	1	0	1	2	28
# CTs	4,229	88	86	53	80	307	4,536
# Outside CT reads	4,163	88	86	53	80	307	4,470
# Outside CT reads abnormal	1,453	17	16	9	14	56	1,509
Pleural only	797	6	6	3	2	17	814
Interstitial only	370	9	9	4	11	33	403
Both	286	2	1	2	1	6	292

Quality control panel readings of radiographs and HRCT scans:

There have been 17 peer review sessions over the past nine years, two were conducted in year 01 of the current grant. In the charts below, the year 01 results are labeled 9A and 9B. Post peer review comparison analysis was completed by Dr. Curtis Noonan, CARD's contracted epidemiologist. For each peer review session, he evaluated reader agreement on the 54 B-reads completed by the five-person panel of B-readers, and on the 24 CT reads performed by the panel of three 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). The accompanying charts reflect Kappa trends over the past six years for chest x-rays and CTs. Supporting raw data is available upon request.

CHART 1: KAPPA FOR PARENCHYMAL CXR READS**CHART 2: KAPPA FOR PARENCHYMAL CT READS****CHART 3: KAPPA FOR PLEURAL CXR READS****CHART 4: KAPPA FOR PLEURAL CT READS****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:

Eligible participants for the Lung Cancer Screening (LCS) program were between the age of 55-84, had 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. In addition to changing the nodule size to 6 mm from 4 mm in previous grants, during this grant year, we added a pre-engagement mailing that is sent out to each LCS participant prior to their LDCT (low-dose CT scan). This gives them information on the risks and benefits of lung cancer screening so that an informed decision about participation can be made. A thoracic radiologist experienced in lung cancer detection from the International Early Lung Cancer Action Program (I-ELCAP) over-read all LDCTs done for lung

cancer screening. Lung cancers reported in this table do not include lung cancers identified through the asbestos related disease screening program. Of note, 114 (22%) of the 524 lung cancer screeners were current smokers. Participants who are current smokers are offered one-on-one smoking cessation counselling when they are given their results and are also sent the information about smoking cessation with their lung cancer screening results.

Lung Cancer Screening	Before Current Grant 7/1/11-8/31/19	Yr.1 Q1 9/1/19-11/30/19	Yr. 1 Q2 12/1/19-2/29/20	Yr. 1 Q3 3/1/20-5/31/20	Yr. 1 Q4 6/1/20-9/30/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
# completed LDCTs	3,008	141	128	63	192	524	3,532
# new LCS participants	not collected	25	21	5	14	65	not collected
# of established participants	not collected	116	107	48	178	449	not collected
# less than annual f/u	not collected	12	19	5	16	52	not collected
# referrals	not collected	6	3	0	3	12	not collected
# confirmed cancers	29	2	0	0	1	3	32
# other findings	not collected	1	0	0	0	1	not collected
# current smokers	not collected	39	31	10	34	114	not collected
# no longer participating	not collected	7	13	5	8	33	not collected

Lung cancer screening allows for early detection of cancers resulting in better health outcomes. Without screening, many lung cancers would not be identified until late stages of disease leading to increased morbidity and mortality. Of the three lung cancers identified in year 01, the only one with a confirmed stage was identified in stage 1 allowing for a high likelihood of curative treatment.

Stage Identified	Before Current Grant 7/1/11-8/31/19	Yr.1 Q1 9/1/19-11/30/19	Yr. 1 Q2 12/1/19-2/29/20	Yr. 1 Q3 3/1/20-5/31/20	Yr. 1 Q4 6/1/20-9/30/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
# confirmed cancers	29	2	0	0	1	3	32
Cancer identified in stage 1	14	0	0	0	1	1	15
Cancer identified in stage 2	5	0	0	0	0	0	5
Cancer identified in stage 3 or 4	5	0	0	0	0	0	5
Cancer identified without stage	5	2	0	0	0	2	7

For early detection of cancer in high risk populations consecutive LCS is recommended so that lung cancers can be treated in the earliest possible stage. 445 of those who participated in lung cancer screening in year 01 had participated in lung cancer screening previously. 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. For those who remain local and eligible to participate in the program, recall letters are mailed annually and follow-up phone calls are made to those who do not schedule their follow-up lung cancer screenings.

Consecutive years	Before Current Grant 7/1/11-8/31/19	Yr.1 Q1 9/1/19-11/30/19	Yr. 1 Q2 12/1/19-2/29/20	Yr. 1 Q3 3/1/20-5/31/20	Yr. 1 Q4 6/1/20-9/30/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
Established LDCT participants	478	112	104	57	172	445	not cumulative
Participated 2-4 consecutive years	283	61	49	33	95	238	not cumulative
Participated 5-8 consecutive years	141	41	36	19	65	161	not cumulative
Rescreened but not consecutive years	54	10	19	5	12	46	not cumulative

ANA Screening:

A new component added to the grant in year 01 was ANA (antinuclear antibodies) screening. The test is offered to all screening participants based on research that has shown a relationship between Libby asbestos exposure and autoimmune disease. Screenings are ordered by CARD and done at Cabinet Peaks Medical Center. Results are received and evaluated by a CARD physician and patients are notified by a nurse of their results. Patient education is given prior to and following ANA screening. If follow-up is recommended an appointment with CARD's physician is offered. Table 12 shows ANA screening results.

TABLE 12: ANA Results	Before Current Grant 7/1/11-8/31/19	Yr.1 Q1 9/1/19-11/30/19	Yr. 1 Q2 12/1/19-2/29/20	Yr. 1 Q3 3/1/20-5/31/20	Yr. 1 Q4 6/1/20-9/30/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
# ANA tests completed	not collected	109	108	81	126	424	not collected
# Abnormal ANA	not collected	19	24	22	28	93	not collected
# Abnormal ANA requiring f/u	not collected	1	11	6	5	23	not collected

Results are also sent to CARD's contracted Ph.D. consultant every quarter. Dr. Jean Pfau reviews results and submits interpretation of them on a quarterly and annual basis.

Interpretation of annual data:

The screening group for this year (2019 – 2020) continues with trends reported previously for Libby, by presenting with a high frequency of positive ANA tests and of autoimmune diagnoses. The prevalence of SLE, RA, scleroderma and sarcoidosis cases continue to be above expected prevalence values for these diseases in the U.S., which were the diseases with significant increases in prevalence in Libby compared to expected (Diegel, R., 2018). The Libby population is also experiencing autoimmune diseases that are not characterized by having positive ANA tests, so ANA testing would not assist with screening for those diseases. However, most of those were not above expected prevalence rates (CHART 5), with the exception of single cases of Wegener's Granulomatosis, Siringomyelia, and rheumatic fever. This screening group has a very high frequency of autoimmune symptoms (54.8%), 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).

Sensitivity and specificity values for ANA testing associated with CT scan data were very low, suggesting that ANA testing is not helpful in screening for pleural or parenchymal abnormalities as seen by CT scan. This is consistent with our previous studies for two reasons. One is that previous work showed that ANA was only associated with progressive LPT, not stable disease (Pfau, et al., 2019). The current CT scan data do not provide any information about progression of the disease. Second, subjects can be ARD negative simply due to negative chest x-ray and lack of ARD symptoms, not requiring a CT scan. When the analysis was performed using all of the ARD diagnosis data, the specificity was higher, suggesting that a subject with a negative ANA test is more likely to be free of ARD, although false positives occur.

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CHART 5: Reported Autoimmune Diagnoses, 2019 - 2020

	Number of subjects (n= 599)	CARD Prevalence	US Prevalence
Rheumatoid Arthritis	29	4.8%	1.0% ^a
Psoriasis, Psoriatic arthritis	21	3.5%	2.4% ^b
CFS/Fibromyalgia	14	2.3%	2.0% ^c
Hashimoto's thyroiditis	10	1.7%	1.3% ^d
Systemic Lupus Erythematosus	10	1.7%	0.1% ^a
Grave's Disease	7	1.2%	0.5% ^e
Crohn's Disease	6	1.0%	1.3% ^c
Ulcerative colitis, Celiac	6	1.0%	(with Crohn's)
Sarcoidosis	5	0.8%	0.02% ^c
Raynaud's Phenomenon	5	0.8%	11% ^d
Multiple Sclerosis	3	0.5%	0.1% ^f
Lichen Planus	3	0.5%	2.0% ^d
Vitiligo	2	0.3%	0.5% ^e
Alopecia	1	0.2%	0.1% ^a
Systemic Sclerosis, CREST	1	0.2%	0.002% ^d
Sjogren's	1	0.2%	2% ^e
Wegener's Granulomatosis	1	0.2%	0.003% ^d
Syringomyelia	1	0.2%	0.008% ^d
Pernicious anemia	1	0.2%	0.1% ^f
Rheumatic fever (h/o)	1	0.2%	0.004% ^a

a = From www.uptodate.com

b = From www.psoriasis.org

c = www.CDC.gov

d = www.medscape.com

e = www.medlineplus.gov

f = www.healthline.com

Smoking Cessation:

In table 13 the number of screening individuals who smoke and cessation activities are reported. The percentage of screening individuals who smoke (16%) is slightly less than the Montana state average of 18% according to americashealthrankings.org. Smoking cessation continues to be extremely important for patient health maintenance. Smoking cessation is included as part of CARD's asbestos health screening and lung cancer screening programs. Respiratory therapists

and spirometry techs provide brief counseling to all identified smokers upon review of their tobacco use history questionnaires. Past quit attempts and current interest is explored. If interested, referral is made to our Case Manager for free one-on-one cessation counselling. Medical providers also educate about the importance of smoking cessation and refer to the Case Manager when patients appeared genuinely interested. CARD's Case Manager was trained as a tobacco treatment specialist during year 01 through the University of Massachusetts: Center for Tobacco Treatment Research and Training's program. The Case Manager also provides resources such as CARD's smoking cessation workbook and Montana Quit Line resources (counseling, follow up calls and cessation medications at low or no cost). In year 01, some additional smoking cessation-related measures are being reported to provide a more in depth picture of CARD's program.

	Before Current Grant 7/1/11-8/31/19	Yr.1 Q1 9/1/19-11/31/19	Yr.1 Q2 12/1/19-2/29/20	Yr.1 Q3 3/1/20-5/31/20	Yr.1 Q4 6/1/20-8/31/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
Smoking Cessation							
# of screeners who smoked	706	22	32	14	30	98	804
# who quit since last screening appointment	50	2	3	2	1	8	58
# brief cessation ed by medical staff	395	21	19	13	24	77	472
# booklets mailed regionally/nationally	not collected	12	5	0	15	32	not collected
# booklets given in clinic/local	not collected	34	72	12	36	154	not collected
# individual follow up smoking cessation sessions	not collected	18	28	8	10	64	not collected
# engaged in ongoing counseling	47	5	7	2	3	17	64
community members educated re: smoking cessation/prevention	not collected	468	0	0	55	523	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 often go hand in hand. The goal of providing outreach and education about asbestos health and lung cancer screening, risk factors, asbestos related disease, health management, and certain Medicare benefits was often done in a combined fashion. Event tables will indicate if each item is primarily outreach or education. Quality control processes are in place as outreach personnel work very closely with the screening Project Director and Project Manager, and all other appropriate CARD staff in developing and conducting all screening outreach and education activities. All final printed materials and community engagement activities are approved by the Project Director. CARD physicians review and approve all technical and medical educational materials for professional audiences.

Why Are Individuals Being Screened?

Beginning with this new grant in 2015, CARD began tracking why individuals were being screened for ARD. Collecting this information helps CARD to tailor outreach and educational materials to the concerns of our screening population so that their screening experiences meet their individual needs. Respondents may choose more than one answer to this question.

	Before Current Grant	Yr.1 Q1 9/1/19- 11/30/19	Yr.1 Q2 12/1/19- 2/29/20	Yr.1 Q3 3/1/20-5/31/20	Yr.1 Q4 6/1/20-8/31/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
# answered the question	3,150	163	125	30	91	409	3,559
# LDS	643	44	28	3	22	97	740
# in clinic	2,507	119	97	27	126	369	2,876
Medical concerns	1,382	35	41	4	18	98	1,480
Family member diagnosed	739	39	28	4	20	91	830
Access to Benefits	268	13	6	0	0	19	287
Support research	316	10	8	0	2	20	336
Legal reasons	54	6	1	0	0	7	61
Screening purposes/multiple	280	60	41	19	50	170	450
Employer Requested Screening	111	0	0	0	1	1	112

Outreach Effectiveness Measure

When an individual engages in a screening appointment (in-clinic or long distance) they are asked one multiple choice question to measure the effectiveness of outreach activities. “How did you hear about the CARD screening program?” The answers are provided in the table below.

How did you hear about screening? (IC= in clinic, LD= long distance)	Before Current Grant	Yr.1 Q1 9/1/19- 11/30/19	Yr.1 Q2 12/1/19- 2/29/20	Yr.1 Q3 3/1/20-5/31/20	Yr.1 Q4 6/1/20-8/31/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
IC- # who answered	3,213	119	97	24	75	315	3,528
IC- traditional advertising (radio, TV, newspaper)	1,548	61	44	17	27	149	1,697
IC- website/social media	0	0	20	7	9	36	36
IC- Community networking (parades, local events)	1,329	29	33	22	39	123	1,452
LD- # who answered	600	49	28	2	18	97	794
LD- traditional advertising (radio, TV, newspaper)	244	14	11	1	1	27	271
LD- website/social media	44	17	7	1	4	29	73
LD- Community networking (events, word of mouth)	312	18	10	0	13	41	353

Outreach Efficacy for Enrollment in Certain Medicare Benefits for ARD:

One of the detailed goals in the grant FOA was to increase awareness about certain Medicare benefits available for individuals diagnosed with ARD resulting from Libby asbestos exposure. Traditional Medicare is available for individuals diagnosed with ARD as a result of Libby asbestos exposure regardless of age or disability status. This is facilitated by placing an EHH (Environmental Health Hazard) designation on an individual’s Medicare status if they are diagnosed with Libby ARD. The Medicare Pilot program is also available for EHH Medicare patients who live in the 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 of individuals reported below in Table 16 are not all screening participants as some had a diagnosis of ARD resulting from the Libby asbestos exposure prior to implementation of the current screening grants. All data in table 17 is based on verification of diagnoses for completion of EHH. We cannot confirm that all of these individuals completed all of the enrollment steps for these benefits however because that is not done through CARD.

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 include: rheumatoid arthritis, lupus, chronic obstructive pulmonary disease (COPD), congestive heart failure (CHF), pacemaker, intraventricular cardiac defibrillator (CD), hypertension, or diabetes. 34 of 71 (48%) people under the age of 65 have improved access to care for ongoing management of their chronic conditions because of enrollment in Medicare via an EHH status.

Certain Medicare Benefits	Before Current Grant 7/1/11-8/31/19	Yr.1 Q1 9/1/19-11/31/19	Yr.1 Q2 12/1/20-2/29/20	Yr.1 Q3 3/1/20-5/31/20	Yr.1 Q4 6/1/20-8/31/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
# of EHHs completed	3,263	28	29	24	37	118	3,381
# of EHHs for people over 65	1,101	10	10	9	10	39	1,140
# of EHHs for people under 65	2,162	18	11	15	27	71	2,233
# who have improved access to medical care for chronic conditions	716	4	6	9	15	34	750

Table 17, reports the number of people who are enrolled in the Medicare Pilot Program for Asbestos Related Disease (MPPARD). The categories reported in the table were updated during the prior grant to reflect the most accurate numbers available to CARD. After an individual is diagnosed with ARD through screening, the process to get on the Pilot program takes two months. For example, if an individual was diagnosed on November 12, 2020, their EHH would be effective December 1, 2020 and their Medicare Pilot benefits will be effective January 1, 2021.

Pilot Benefit Utilization	Before Current Grant 7/1/11-8/31/19	Yr.1 Q1 9/1/19-11/31/19	Yr.1 Q2 12/1/20-2/29/20	Yr.1 Q3 3/1/20-5/31/20	Yr.1 Q4 6/1/20-8/31/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
# enrolled in Medicare Pilot	1,728	20	12	11	7	50	1,778
# screening participants enrolled in Pilot after diagnosis	672	1	2	2	0	5	677
# of paid Pilot claims	not collected	2,158	2,124	1,698	1,678	7,658	not collected
# Pilot related encounters (face to face, email, phone call, education)	not collected	219	299	128	361	1,007	not collected
# Pilot approved service authorizations processed	not collected	230	132	160	228	750	not collected
# community Pilot education	not collected	260	23	12	60	95	not collected

Targeted outreach and education- local and regional/national:

Below, Table 18 describes local outreach and education, and Table 19 describes regional/national outreach and education done during year 01. Many resident 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 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. Local activities are described more specifically in each individual report. These activities help keep CARD visible in a positive light in the community and also offer opportunities to educate about CARD services.

Regional and national outreach are both very important for recruitment to long distance screening and for educating a larger population who could encounter exposures to LA in attic insulation or at processing sites around the country.

Method	Before Current Grant 7/1/11-8/31/19	Yr.1 Q1 9/1/19-11/30/19	Yr.1 Q2 12/1/19- 2/29/20	Yr.1 Q3 3/1/20-5/31/20	Yr.1 Q4 6/1/20-8/31/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
Local newspaper ads	598	36	36	57	28	157	755
Education article in newspapers	47	3	3	3	3	12	59
Health Link and Health Resource Guide	10	0	1	1	0	2	12
Radio ads	9,500	1,280	1,280	1,837	264	4,661	14,161
TV ads	8,236	195	195	32	0	422	8,658
Educational brochures given (screening, LCS, LDS)	443	17	21	45	215	298	741
Patient Education booklets	3,452	86	89	63	72	310	3,762
Parades	36	1	0	0	1	2	38
Community events sponsored	140	17	13	7	8	45	185
Community meetings	218	20	25	13	19	77	295
Google AdWords Impressions	not collected	357	3,339	4,910	2,345	10,951	10,951
Google AdWords Clicks	not collected	16	222	295	238	771	771
Website visits	not collected	247	455	468	535	1,705	1,705
Website visits to patient education pages	not collected	86	189	164	185	624	624
community presentations/ events attended	76	3	1	6	7	17	93
website visits to provider education pages	not collected	26	46	62	73	207	207
newsletters sent locally	not collected	0	0	3,686	4,457	8,143	8,143

Method	Before Current Grant 7/1/11-8/31/19	Yr.1 Q1 9/1/19-11/30/19	Yr.1 Q2 12/1/19- 2/29/20	Yr.1 Q3 3/1/20-5/31/20	Yr.1 Q4 6/1/20-8/31/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
Newspaper -outreach	76	9	10	12	37	68	144
Radio ads -outreach	10,242	125	450	180	0	755	10,997
TV ads -outreach	8,236	195	2,713	8,804	10,176	21,888	30,124
Website -outreach	not collected	3,483	5,504	3,732	4,580	17,299	17,299
Website -patient education	not collected	475	724	583	629	2,411	2,411
Website -provider education	not collected	125	189	191	239	744	744
Google AdWords Impressions-outreach	not collected	18,037	21,090	9,997	4,726	53,850	53,850
Google AdWords Clicks-outreach	not collected	877	1,126	529	633	3,165	3,165
Educational brochures given (screening, LCS, LDS)	not collected	10	37	25	47	119	119
YouTube Channel	14,100	552	495	1,100	675	2,822	16,922
Patient Education booklets - education	3,298	100	72	47	58	277	3,575
Lung cancer screening brochures - education	180	7	3	42	12	64	244
Health promotion events sponsored -outreach	36	1	2	1	1	5	41
Newsletters sent	not collected	0	0	3786	3648	7,434	not collected

Targeted Outreach/Education to medical professionals:

Table 20 details efforts directed towards medical professionals. Raising awareness about Libby asbestos within the medical community is important to help facilitate referrals and coordinate care.

Method	Before Current Grant	Yr.1 Q1 9/1/19-11/30/19	Yr.1 Q2 12/1/19- 2/29/20	Yr.1 Q3 3/1/20- 5/31/20	Yr.1 Q4 6/1/20-8/31/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
Website -provider education	not collected	125	189	191	239	744	not collected
Mailings	not collected	47	0	0	74	121	not collected
CARD newsletter - education	27,948	0	0	454	602	1,056	2,407
provider education book mailed	1,351	97	87	38	49	271	316
Professional Conferences - education/outreach	45	2	0	0	1	3	191
Medical professionals -education	188	3	4	17	22	46	46
Press release pick ups	not collected	not collected	110	118	0	228	not collected
other targeted outreach efforts	not collected	not collected	300	0	1- masks	301	not collected

Website Use:

CARD's website is an important tool for outreach, education, and communication with target populations. During this grant year a feed to our Facebook page was added to the website's homepage so that users can be informed about the most up to date information. This has been an important communication tool during the COVID-19 pandemic when the clinic has had reduced staffing, reduced appointment capacity, and we have been closed down temporarily due to pandemic concerns. The number of sessions are the number of times users visited CARD's website and the number of pages viewed includes all of the different pages within CARD's overall website. Page depth is how many pages a single user looks at in one session.

Website Use	Before Current Grant	Yr.1 Q1 9/1/19-11/30/19	Yr.1 Q2 12/1/19- 2/29/20	Yr.1 Q3 3/1/20-5/31/20	Yr.1 Q4 6/1/20-8/31/20	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
Screening applications submitted via website	202	36	27	17	25	105	307
Contact CARD emails via website	433	29	21	22	34	106	539
# of website sessions	103,871	1,941	3,128	1,982	2,390	9,441	113,312
# pages viewed	252,023	3,483	5,504	3,732	4,580	17,299	269,322
session length 30+ minutes	1,398	14	12	10	11	47	1,445
session length 10-30 minutes	13,642	58	177	51	77	363	14,005
session length 3-10 minutes	29,537	85	172	112	121	490	30,027
session length 1-3 minutes	21,664	100	174	130	163	567	22,231
session length 31-60 seconds	9,413	72	95	91	109	367	9,780
session length 11-30 seconds	12,448	71	107	83	109	370	12,818
session less than 10 seconds	bounce factor	1,541	2,391	1,505	1,800	7,237	7,237
Page depth: 1-9 Pages viewed in session	25,499	2,820	3,088	1,947	2,345	10,200	35,699
10-14 Pages viewed in session	1,709	280	26	18	24	348	2,057
15-19 Pages viewed in session	614	156	8	7	4	175	789
20+ Pages viewed in session	734	227	6	10	10	253	987
# of users	39,074	1,941	3,128	1,699	2,014	8,782	47,856
new users	not collected	91%	92%	98%	99%	not cumulative, reported as a percentage	not cumulative, reported as a percentage
returning users	not collected	8%	8%	2%	1%		
Male users	not collected	45%	42%	47%	46%		
Female users	not collected	55%	57%	53%	54%		
Age between 18-24	not collected	5%	9%	13%	10%		
Age between 25-34	not collected	21%	23%	22%	23%		
Age between 35-44	not collected	19%	14%	18%	16%		
Age between 45-54	not collected	19%	18%	15%	19%		
Age between 55-64	not collected	22%	17%	17%	16%		
Age 65+	not collected	11%	15%	15%	16%		

Social Media outreach efforts:

During the COVID-19 pandemic, outreach and educational activities have been significantly limited, so CARD has been focusing on expanding our reach via the internet. We have been working to increase our presence and followers on Facebook and Instagram by posting more often and inviting others to follow us. This will continue into grant year 02, and our YouTube channel will also be expanded.

CARD Annual Rally:

CARD's annual Rally was held on November 7, 2019 during quarter 01. The event was staffed by over 12 CARD employees and 10 community health education partners who volunteered to help host the free, two-hour, family-friendly, educational event. The Rally was held afterschool in the elementary school gymnasium. This year's fun-filled theme was Navigating your way to better health and included pirate décor and costumes. Six interactive stations that engaged and educated participants included the following topics: (1) asbestos (2) smoking and vaping (3) alcohol and drugs (4) resources for ages 0-5 (5) resources for teens and adults (6) resources for seniors.

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' activities, prizes or other useful items such as mini first aid kits with CARD Screening information were offered. Table 20 details year 01's Rally attendance.

TABLE 20: CARD RALLY				
	7/1/11- 8/31/19	Yr.1 Q1 9/1/19- 11/30/19	Yr. 1 Total 9/1/19 - 8/31/20	Cumulative totals
# students present	840	268	268	1,108
# adults present	340	104	104	444

CHALLENGES:

REASON FOR DELAY AND ANTICIPATED CORRECTIVE ACTION OR DELETION

The COIVD-19 Pandemic:

A vast and all-encompassing concern, COVID-19 has impacted the screening program significantly during year 01 of the grant. During quarter three, CARD was closed from mid-March until mid-May, and most of our staff were temporarily laid off due to governmental orders to shelter in place. Our local hospital stopped all non-essential testing including imaging for both asbestos health and lung cancer screening during this time. All outreach and educational activities involving groups were also cancelled during this time period and many have yet to be reintroduced. CARD reopened on May 11 and brought back all but three of our staff members. The job duties of those permanently laid off have been successfully transitioned to other staff members since our volume of patients had to be decreased leaving time for other duties. Following CARD's reopening, we have implemented significant changes to help protect our patients and staff. These include limiting the number of patients in the clinic, the use of face masks by all staff and patients, hourly sanitizing of frequently touched surfaces, weekly professional electrostatic sanitization, staff and patient temperature and symptoms checks daily, staff COVID testing biweekly, enforcement of social distancing, use of HEPA filters, encouragement of long distance participation rather than travelling to CARD, appointment reminder calls that include a request for patients not to bring extra people to their appointments and symptoms checks with rescheduling of screening appointments as needed, and the use of a designated sick room for those who do come in and don't feel well.

Pulmonary function testing has also been significantly impacted by COVID-19. During year 01, CARD implemented the following precautions when performing breathing tests for screening: tests were conducted in rooms with medical grade HEPA filters in use, techs performing spirometries wore PPE, patients performing spirometry wore face masks whenever they were not performing the pulmonary function tests, following testing rooms were left for 20 minutes so that airborne particles/pathogens could settle and surfaces were then disinfected afterwards prior to the room's next use. As always, disposable bacterial/viral filters were used for each patient, and nose clips and pneumotachs were sanitized using bleach between uses.

STATUS OF PROGRAM, SCREENING, INFRASTRUCTURE, AND STAFF

The grant goals and objectives, including changes from previous grants, were implemented successfully during year 01 with quality assurances in place for delivery of ARD and LCS screening activities, data management, and screening-related outreach and educational activities. The CARD's infrastructure is solid with well-developed processes that have proven effective over the last nine years of grant implementation. Processes have improved over time with ongoing refinement in areas such as screening data management allowing for more efficient data collection and reporting. Completeness and accuracy of the database is evident by consistency of data reported across multiple tables. All data is quality controlled and scrubbed for complete accuracy before reports and table outcomes are generated. All screening CT scans are read by a qualified physician, so a CARD Physician over-reads all CT images ordered by the Physician Assistant.

Successes:

In grant year 01, the addition of ANA screening was implemented successfully as CARD's staff worked closely with Cabinet Peaks Medical Center (CPMC) staff. An efficient workflow has been established and patients have expressed satisfaction with the ANA component of the screening program. ANA screening information has been added to our outreach and educational materials as well.

Reporting was updated this grant year with a number of new elements being added which help to better track completion and effectiveness of grant goals. Some of these updates included tracking lung cancer screening program participation and dropout rates/reasons, referrals, and findings. Outreach and education efforts are now separated out into local, regional/national, and targeted toward healthcare workers. We feel that these changes to reporting have improved our ability to successfully monitor grant progress and effectively convey results.

Dr. Lee Morrissette, who started at CARD in the beginning of quarter 02 has been very instrumental in refining the ANA workflow and processes for this grant as well as helping with administrative tasks and developing and implementing outreach and education for the screening program during the last two quarters of this grant year after our Outreach Coordinator was permanently laid off. She sees some screening patients as well as established patients and we've received very good feedback from them about her care.

CARD's Case Manager received training and is now a certified tobacco treatment specialist. One particularly effective outreach activity conducted during this grant year was distribution of face masks with CARD's screening logo and information. These have been widely used throughout the community and we continue to receive requests for them regularly since Montana

continues to have a mask mandate. With many outreach and educational activities cancelled this year, the masks have been an important method to keep CARD's services on people's minds, and physically on their faces too.

MEASURES OF EFFECTIVENESS

Measures of effectiveness were reported under each specific goal above. Some overall grant successes include the following:

In grant year 01, the addition of ANA screening was implemented successfully with CARD's staff working closely with Cabinet Peaks Medical Center (CPMC). Patients have expressed satisfaction with the ANA component of the screening program and information about it has been added to our outreach and educational materials.

Reporting was updated this grant year with a number of new elements being added which help further track completion and effectiveness of grant goals. Some of these updates including tracking lung cancer screening program participation and dropout rates and reasons, referrals, and findings. Outreach and education efforts are now separated out into local, regional/national, and targeted. We feel that these changes have improved our ability to successfully monitor grant progress and effectively convey results in reports.

FINANCIAL RECAP OF GRANT EXPENDITURES

As of the end of grant year 01 (August 31, 2020), \$1,685,107.95 had been spent. Now, as of this report, all year 01 screening expenses have been paid, and the amount expended totals \$2,069,162.65, 83% of the \$2,499,969.00 grant award for year 01. Actual expenses were less than budgeted due to the COVID-19 pandemic as described above.