Nevada MCO Heart and Lung Organ Transplant Experience

MCAC April 2021

Agenda

- Framing the Issue
- Experience of Transplant Service Requests within Nevada within a commercial plan – HPN
- Experience within another state Managed Medicaid with transplant services – Anthem
- Current State in Nevada for policy, process and service delivery models – SilverSummit

State of the State

Heart (Orthotopic Heart Transplant)

- Transplantation excluded
  - No center in Nevada
  - Post transplant services available (medical)
- Ventricular Assist Devices included
- Advanced Heart Failure therapies included

Lung

- Transplantation excluded
- Biologic Therapies available

Health Plan of Nevada

Commercial Experience in Our State

Anthem

Experience with Transplant Services within Managed Medicaid in an alternate state

SilverSummit

Current state, policies and processes, and next steps

Heart Transplantation

silversummit healthplan

Demographics in Orthotopic Heart Transplant (OHT) patients

- nonischemic dilated cardiomyopathy in 49.8%
- ischemic cardiomyopathy in 33.8% with congenital heart disease (3.1%)
- hypertrophic cardiomyopathy (3.1%)
- restrictive cardiomyopathy (3.4%)
- valvular cardiomyopathy (2.8%)
- retransplantation (2.9%), and other (1.2%)
- median age now at 55 years and the proportion of patients age >60 has also been increasing over the last few years

Use of Ventricular Assist Devices and Heart Transplantation for Advanced Heart Failure
Leslie Miller, Emma Birks, Maya Guglin, Harveen Lamba, and O.H. Frazier
Circulation Research Volume 124, Issue 11, 24 May 2019, Pages 1658-1678
https://doi.org/10.1161/CIRCRESAHA.119.313574

Heart Transplantation

Demand is not clearly known

- Given guidelines of which demographics receive OHT, Nevada should not have a variance from population modeling from other states

Example

- 6,144 SSHP members with significant Heart Failure
  - 18 would meet disease state criteria, excluding those with claims for services that are a contraindication
  - 1 excluded; already had a transplant
  - 12 excluded on required social support criteria
  - 5 remaining; typical approval amount 20% = 1 potential member

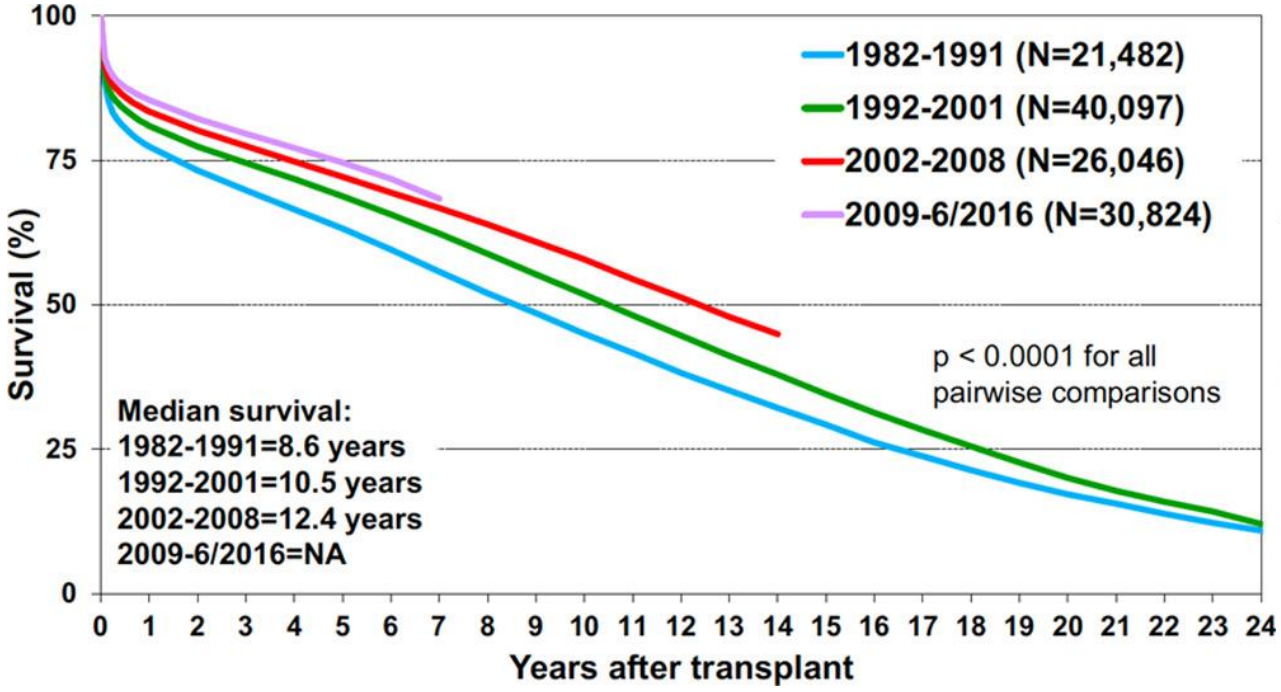
Heart Transplantation

Demand for Services

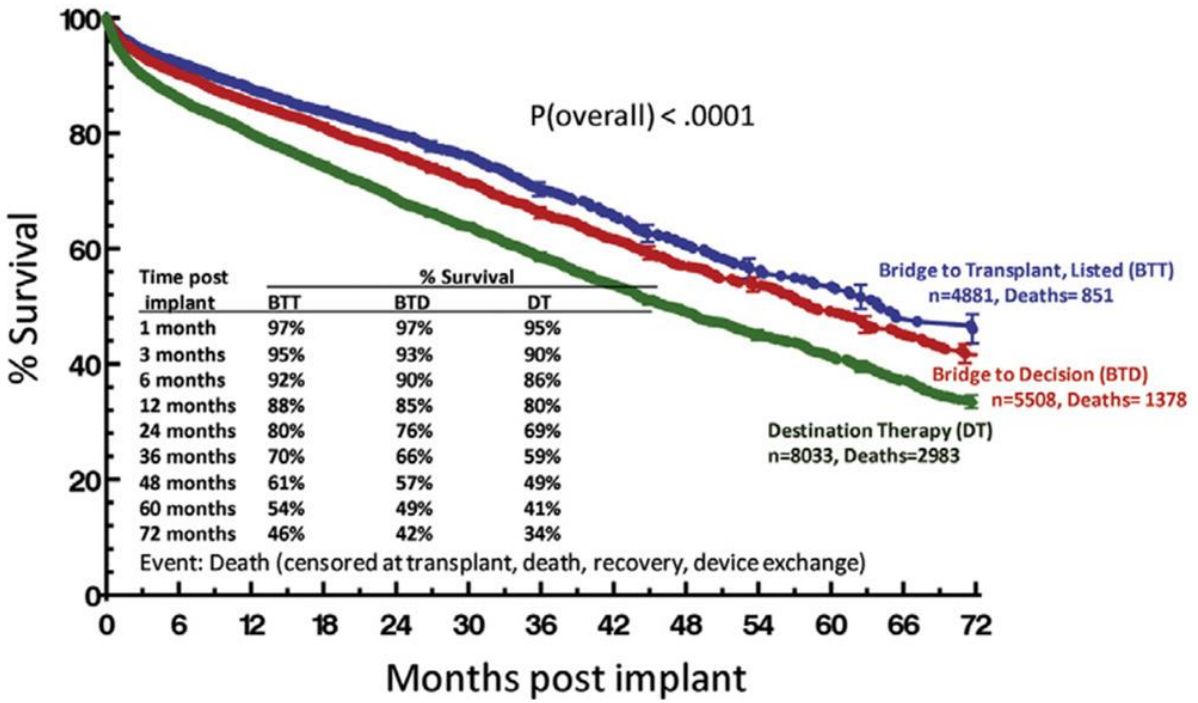
- Each MCO has anecdotal data on requests (1-3 patients each)
- Heart Failure care clinics at UMC/UNLV, MountainView and Renown/UNR all have patients that have been considered at some point but not an exact tally of who would be OHT appropriate
- Other cardiology practices also have individual stories
- Information on destination VAD is available

Mortality in Advanced Treatment

OHT Survival



VAD Survival



Mortality at 5 years was significantly lower in those waitlisted for transplant (28%) compared with the DT LVAD group (64%), a relative risk ratio of 0.42 after adjusting for select clinical factors

Heart Transplantation

Comparative Effectiveness of OHT

- Average life expectancy for OHT-eligible patients is estimated at 1.1 years, with 39% surviving to 1 year.
- OHT with a median wait time of 5.6 months is estimated to increase life expectancy to 8.5 years, and costs <$100 000/quality-adjusted life-year gained, relative to inotrope-dependent medical therapy.
- Bridge to transplant-LVAD followed by OHT is estimated to increase life expectancy to 12.3 years, for $226 000/quality-adjusted life-year gained versus OHT. Among OHT-ineligible patients, mean life expectancy with inotrope-dependent medical therapy is estimated at 9.4 months, with 26% surviving to 1 year.
- Patients who instead received destination therapy-LVAD are estimated to live 4.4 years on average from extrapolation of recent constant hazard rates beyond the first year. This strategy costs $202 000/quality-adjusted life-year gained, relative to inotrope-dependent medical therapy.

Comparative Survival and Cost-Effectiveness of Advanced Therapies for End-Stage Heart Failure
Elisa F. Long, Gary W. Swain, and Abeel A. Mangi
Originally published 21 Feb 2014https://doi.org/10.1161/CIRCHEARTFAILURE.113.000807
Circulation: Heart Failure. 2014;7:470–478

Heart Transplantation Network

- Currently no transplantation services available in Nevada
- Multi-disciplinary post transplant care available at UMC and Renown
- VAD services available at Sunrise Hospital
- Robust Pediatric Cardiovascular Surgical Program
- Policies and Procedures for evaluation for Medical Necessity and SDOH supports exist within each MCO

Heart Transplantation

silversummit healthplan

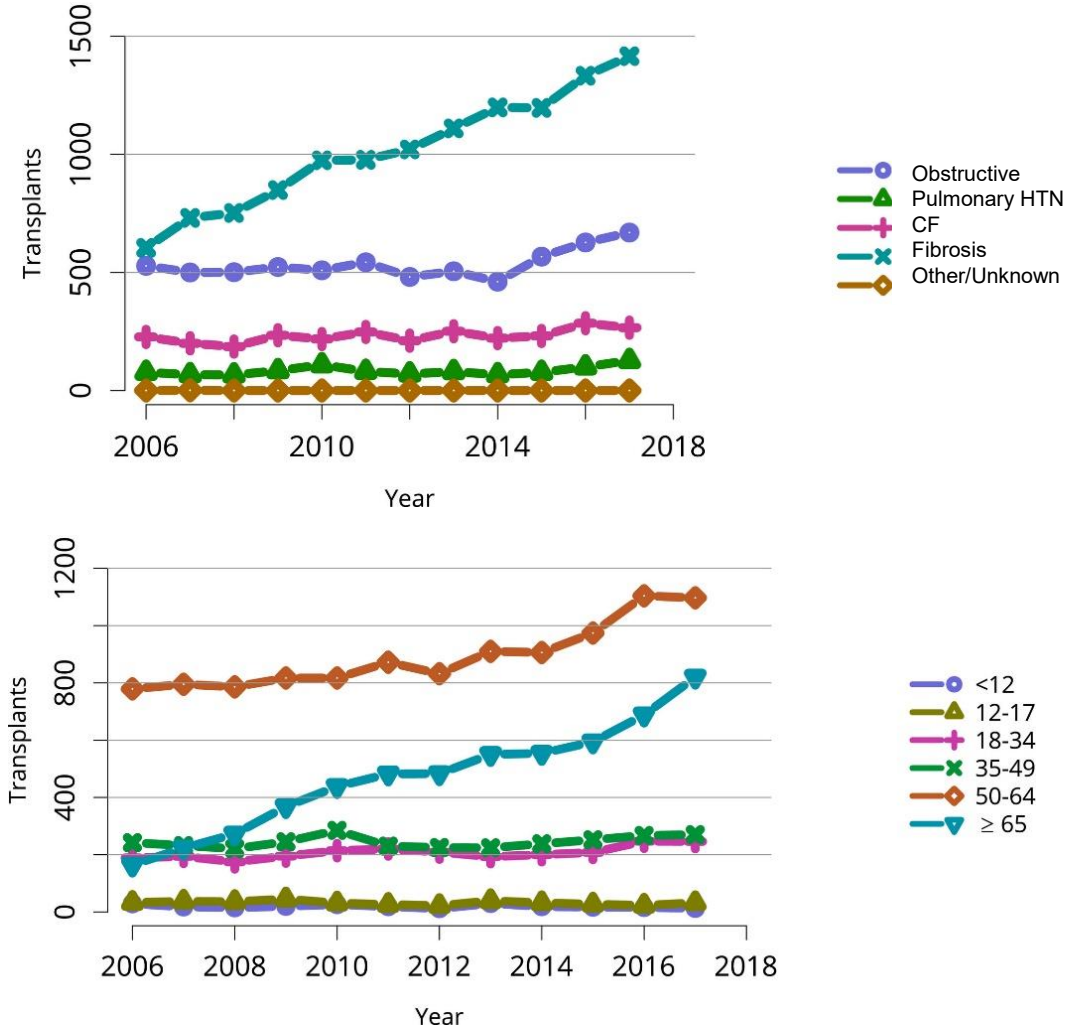
Needs

- Develop a network to coordinate evaluation, transplantation episode, bridge treatment with VAD
- Determine suppressed demand within our Heart Failure Clinical Practices
- Ensure existing infrastructure can accommodate post transplant management
  - Outpatient
  - Inpatient
- Incorporate into Risk Adjustments and determine best assignment

Lung Transplantation

- 65 Centers across the US preform Lung Transplants
- Priority in donor system to those living within 250 miles of transplant center impact geography and demographics (white/ill)

OPTN/SRTR 2017 Annual Data Report: Lung



Lung Transplantation

	Mayo, May 2005 to December 2008 (period 1)	Mayo, January 2009 to December 2011 (period 2)	Mayo, January 2012 to April 2015 (period 3)	
N	160	166	147	Mayo over time: P[a]
Outpatient at transplant	142 (88.8%)	130 (78.3%)	97 (66.0%)	<0.001
Hospitalized prior transplant	10 (6.3%)	17 (10.2%)	22 (15.0%)	
ICU prior transplant	8 (5.0%)	19 (11.4%)	28 (19.0%)	
Age in years ± SD	57.9 ± 10.9	58.9 ± 9.9	55.1 ± 13.6	0.111
African American	8.5%	10.6%	7.9%	0.685
Non-African American	91.5%	89.4%	92.1%	
Single lung transplant	54.4%	30.7%	32.0%	<0.001
Bilateral lung transplant	45.6%	69.3%	68.0%	
Recipient diagnosis				
Obstructive lung disease	36.3%	19.9%	13.6%	<0.001
Bronchiectasis	7.5%	5.4%	9.5%	0.383
Restrictive lung disease	46.9%	59.6%	59.2%	0.034
Pulmonary hypertension	0.6%	1.2%	2.7%	0.295
Other	8.8%	13.9%	15.0%	0.206
Mean LAS at trans ± SD	45.7 ± 17.5	51.6 ± 19.1	58.3 ± 21.9	<0.001
LAS[b] < 40	60.6%	36.1%	23.8%	<0.001
LAS[b] 40–59	22.5%	40.4%	42.9%	<0.001
LAS[b] 60–79	7.5%	8.4%	6.1%	0.737
LAS[b] ≥ 80	9.4%	15.1%	27.2%	<0.001
LAS at listing	41.8 ± 14.1	41.9 ± 13.5	48.3 ± 20.5	0.002
Increment[c]	3.9 ± 10.0	9.7 ± 16.0	10.1 ± 15.6	<0.001
LOS total (admission to discharge)[d]	16.2 ± 15.7	23.9 ± 30.4	30.6 ± 33.3	<0.001
LOS (transplant to discharge) days ± SD	14.6 ± 15.0	19.2 ± 26.1	23.2 ± 25.5	<0.001
ICU days	5.9 ± 8.2	11.6 ± 18.4	17.1 ± 26.0	<0.001
Non-ICU days	10.3 ± 11.3	12.3 ± 18.1	13.5 ± 19.7	0.325
1-y Survival[e]	0.881 (0.831, 0.933)	0.819 (0.763, 0.880)	0.925 (0.883, 0.969)	0.018
2-y Survival[f]	0.761 (0.697, 0.830)	0.716 (0.650, 0.788)	0.854 (0.794, 0.916)	0.015
5-y Survival[g]	0.514 (0.441, 0.598)	0.532 (0.457, 0.616)	na	0.025
30-d Readmit[h]	33.8%	42.2%	46.9%	0.057

[a] χ^2 test for discrete variables, Kruskal-Wallis test for continuous variables.
[b] LAS at the time of transplant.
[c] Increment in LAS from listing to transplant.
[d] LOS*, mean LOS for transplant encounter including pretransplant days if the patient was hospitalized at the time of transplant.
[e] 1-year patient survival 2005 to 2013 cohort, log rank test.
[f] 2-year patient survival 2005 to 2012 cohort, log rank test.
[g] 5-year patient survival 2005 to 2009 cohort, log rank test.
[h] 30-day readmission rate.

TRANSPLANTATION

Lung Allocation Score (LAS) used for Organ Assignment

- Result of court ruling
- Required 250 radius ruling
- Increased costs, Increased Mortality
- Requires proximity to center of recipient

Unintended Consequences of Changes to Organ Allocation Policy.

Puri V, Hachem RR, Frye CC, Harrison MS, Semenkovich TR, Lynch JP, Ridolfi G, Rowe C. Meyers BF, Patterson GA, Kozower BD, Pasque MK, Nava RG, Marklin GF, Brockmeier D, Sweet SC, Champman WC, Kreisel D. American Journal of Transplantation. Published online Feb. 13, 2019

Utilization and Cost Analysis of Lung Transplantation and Survival After 10 Years of Adapting the Lung Allocation Score

Keller, Cesar A.; Gonwa, Thomas A.; White, Launia J.; Rucci, March E.; Visscher, Sue L.; Kennedy, Cassie C.; Daly, Richard C.; Naessens, James M.

Transplantation103(3):638-646, March 2019. doi: 10.1097/TP.0000000000002227

Lung Transplantation

Study period	Time interval	LAS:	<40	40–59	60–79	80–100
January 2009 to December 2011	Transplant Hospitalization[a]	N	60	67	14	25
		Mean (SD)	173 593 (142 122)	174 806 (139 441)	244 199 (80309)	322 083 (169 576)
	(US $/episode)	Median	143 855	144 983	238 721	265 542
		Q1-Q3	115 835–163 426	122 809–169 377	218 377–273 475	194 565–389 922
	Preoperative hospital[a]	N	60	67	14	25
	(US $/episode)	Mean (SD)	3301 (15095)	9869 (22389)	36549 (39027)	88290 (132 187)
		Median	0	0	24188	49001
		Q1-Q3	0–0	0–4922	0–71252	27575–98253
	Postoperative hospital[a]	N	60	67	14	25
	(US $/episode)	Mean (SD)	170 127 (143 536)	165 014 (138 234)	195 074 (74781)	232 483 (130 186)
		Median	137 976	144 024	199 455	187 867
		Q1-Q3	107 259–163 426	118 986–168 683	153 263–226 625	154 769–272 155
	Posttransplant	N	59	63	13	22
	(US $/year)[b]	Mean (SD)	107 017 (137 903)	117 950 (147 126)	137 613 (122 663)	190 407 (227 885)
		Median	70535	52104	61212	99161
		Q1, Q3	39721–118 585	33448–120 185	46075–205 446	35666–202 507
	Total cost	N	60	67	14	25
	($/episode + post 1 yr)	Mean (SD)	278 826 (202 015)	285 714 (222 261)	371 982 (154 918)	489641 (328 527)
		Median	209 159	218 843	330 645	436 138
		Q1, Q3	180 265–293 993	171 041–293 272	250 641–476 465	269 915–629 241
January 2012 to April 2015	Transplant Hospitalization[a]	N	35	63	9	40
		Mean(SD)	166 574 (47611)	222 626 (124 128)	355 162 (275 736)	377 833 (234 966)
	(US $/episode)	Median	170 073	184 567	243 622	294 724
		Q1-Q3	148 476 to 190 089	148 548–268 788	218 609–402 680	221 153–475 179
	Preoperative hospital[a]	N	35	63	9	40
	(US $/episode)	Mean (SD)	1242 (2305)	21127 (43859)	124 120 (282 318)	50291 (42246)
		Median	0	0	0	46105
		Q1-Q3	0–3148	0–4518	0–95571	19416–60658
	Postoperative hospital[a]	N	35	63	9	40
	($/episode)	Mean (SD)	168 517 (42202)	201 499 (115 194)	231 042 (85867)	325 272 (227 235)
		Median	170 055	168 782	218 609	239330
		Q1-Q3	148 476 to 186 953	137 213–204 315	169 190–250 416	187 346–353 940
	Posttransplant	N	35	62	8	38
	($/yr)[b]	Mean (SD)	116 763 (105 797)	100 474 (85532)	55889 (19549)	156 184 (164 984)
		Median	75506	80661	49201	79614
		Q1-Q3	36549–190 647	35073–122 011	39578–73186	44342–197 346
	Total cost	N	35	63	9	40
	(US $/episode + post 1 yr)	Mean (SD)	283 329 (118 258)	321 505 (141 644)	404 842 (269 530)	526 208 (318 171)
		Median	251 223	271210	291 566	439 976
		Q1-Q3	201 678 to 345 641	219 109–411 031	250 332–445 409	288 845–638 680
January 2009 to April 2015	Transplant Hospitalization[a]	N	95	130	23	65
		Mean (SD)	171 007 (116 230)	197 980 (133 898)	287 619 (185 808)	356 391 (212 541)
	(US $/episode)	Median	149 393	158 015	239 775	290 730
		Q1-Q3	125 439–177 774	136 057–215 684	218 377–291 020	218 493–433 763
	Preoperative hospital[a]	N	95	130	23	65
	(US $/episode)	Mean (SD)	2542 (12080)	15325 (34826)	70816 (178 305)	64906 (89371)
		Median	0	0	19852	48037
		Q1-Q3	0–0	0–4611	0–78524	22217–68116
	Postoperative hospital[a]	N	95	130	23	65
	(US $/episode)	Mean (SD)	169 534 (116 517)	182 695 (128 411)	209 149 (79422)	289 584 (199 727)
		Median	149 393	151 484	204 518	218 399
		Q1-Q3	125 273–177 450	130 487–191 466	168 384–231 866	172 423–314 038
	Posttransplant[a]	N	94	125	21	60
	(US $/year)[b]	Mean (SD)	110 646 (126 391)	109 282 (120 411)	106 480 (103 997)	168 733 (189 290)
		Median	71119	72295	55673	83461
		Q1-Q3	39721–126 514	34881–120 557	42729–104 073	39465–199 927
	Total cost	N	95	130	23	65
	(US $/episode + post 1 yr)	Mean (SD)	280 485 (175 151)	303 059 (187 722)	384 840 (202 157)	512 144 (320 131)
		Median	216 381	250 419	319 550	436 138
		Q1-Q3	185 514–327 553	190 751–379 978	250 332–476 465	279 413–629 241

Transplant episode, admit date to discharge date, transplant encounter; preoperative stay: transplant encounter admit date up to transplant date; postoperative stay, transplant date to transplant encounter discharge date; 1 year post, transplant encounter discharge date to 1 year posttransplant.
[a] Overlapping time frames.
[b] 13 patients died in hospital.
LAS, lung allocation score.

TRANSPLANTATION

After adjusting for patient factors and calendar year, total episode costs increased 12.0% (95% confidence interval, 9.3%–14.5%) for every 10-point increase in Lung Allocation Score (LAS) at transplant

Utilization and Cost Analysis of Lung Transplantation and Survival After 10 Years of Adapting the Lung Allocation Score

Keller, Cesar A.; Gonwa, Thomas A.; White, Launia J.; Rucci, March E.; Visscher, Sue L.; Kennedy, Cassie C.; Daly, Richard C.; Naessens, James M.
Transplantation103(3):638-646, March 2019. doi: 10.1097/TP.0000000000002227

Lung Transplantation

Demand is Uncertain

- Pulmonary Clinic at UMC/UNLV notes there are “a few transplant candidates but geography creates a significant barrier”
  - Example 8,654 SSHP members with pulmonary conditions in pulmonary hypertension, cystic fibrosis, and fibrosis groups
    - 13 would meet disease state criteria excluding those with claims for services that are a contra-indication
    - All would be excluded on geography (living < 250 miles from a transplant center)
  - Other groups are possible; however, without a transplantation pulmonologist unsure on inclusion review (obstruction group)

Needs are Broad

- Pre- and Post-Transplant Outpatient Service
- Transplantation Center relationship with no center in Nevada

Next Steps

- MCOs would support Public Workshop with Specialty Providers in cardiac and pulmonary programs to uncover any “suppressed” demand
- MCOs would continue to engage with existing resources
  - Locations providing advanced HF care
  - Pulmonary programs that may have at risk populations
- MCOs can support ability to analyze data from similar markets to determine feasibility and required risk adjustments or carve out models