

## California Telehealth Resource Center Telehealth Program Monitoring Data Project

## **Performance Indicators and Data Element Matrix**

Revised to include data elements or aggregated data elements. Also includes column to consider core, desirable or remove. Decisions would be impacted by the aggregated data element matrix.

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services Chronic	Disease Home Monitoring	elCU	ED Services	Admin	Educational Services	Selected Indicators
Program Performance									
Percent of all health services / encounters performed using telehealth: total and by specific service type.	Non telehealth services/ encounters total number total by service type     Services provided / obtained through telehealth: total number total by service type	Indicates overall use of telehealth in the facility – total and by specific service types.	х	х	х	х	х	х	
2. Telehealth services provided: total and by type	Completed telehealth en- counters: total number total by service type	General overview of telehealth use	х	х	х	Х	х	х	
3. Clinical services provided: total and by type	Clinical service encounters: total number total services by type	General overview of clinical services.	Х	Х	х	Х	Х	Х	
4. Administrative services provided: total and by type	Administrative service usage: total number total services by type total participants total hours	General overview of administrative services. Types could include:  • Administrative meetings • Community / business non-health meetings • Commercial conferencing services	х	х	х	х	х	х	
5. Educational services provided: total and by type	Educational services provided:     total number     total number by type     total attendees     total hours	General overview of educational services. Types could include:  • Education for health professionals	х	х	х	х	х	х	

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	elCU	ED Services	Admin	Educational Services	Selected Indicators
		<ul> <li>Elective education for health professionals</li> <li>Case reviewso Grand rounds</li> <li>Community Health education programs</li> <li>Patient support groups</li> </ul>							
6. Clinical versus non clinical uses, in percent.	Clinical encounters:     Total     Non-clinical encounters:     Total	General indicator of service use	х	х	х	Х	х	х	
7. Percent of requested telehealth services / encounters that were successfully scheduled.	Telehealth encounters requested:     Total number of requests     Total number by type     Telehealth encounters scheduled:     total number scheduled     total number scheduled by type	<ul> <li>May identify telehealth provider shortages or long wait times.</li> <li>May identify scheduling operations problems.</li> </ul>	х	х	Х	х	х	х	
8. Percent of scheduled telehealth encounters completed.	Telehealth encounters scheduled:     total number scheduled total number scheduled by type     Telehealth encounters completed:     total number completed total number completed by type	Alerts to low completion rates. May be affected by (partial list): provider avail- ability, technical problems, patient site staffing, patient no show	х	х	х	х	х	х	
9. Percent of scheduled telehealth encounters not completed: total, by type, and by specific reason.	Telehealth encounters scheduled:     Total number scheduled     Total by type     Telehealth encounters not     completed:     Total number completed     Total number by type     Not completed by specific reason	Alerts to low completion rates. Reason codes could include:  • Provider not available • Patient failed to appear • Patient presenter unavailable • Participants not available • Patient refused service • Required workup/ tests results or other clinical data not available	x	x	x	X	х	х	

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	elcU	ED Services	Admin	Educational Services	Selected Indicators
		Technical / equipment problem							
10. Percent of encounters that are started but can not be completed: total and by reason.	Telehealth encounters started Total Total by type Telehealth encounters started ut not completed: Total Total by type Total by reason	Alert to low completion rates. Reasons could include: Patient refused after visit began Presenter of provider call away during visit Required work/up test results not available Technical/Equipment problem	X	x	x	х	х	х	
11. Percent of patient refus- als: total and by reason.	Scheduled telehealth encounters:     Total scheduled     Total by type     Patient refusals:     Total refusals     Total by type     Total by reason	Monitors refusal rates and reasons for refusal. Reasons could include:  • Uncomfortable with technology  • Unsure that technology is effective  • Want to see doctor in person	х	×	x	х	х	х	
12. Completed encounters impacted by a technical issue: percent of total completed encounters and percent by reason.	Encounters completed:     Total completed     Total by type     Encounters with technical issue reported     Total     Total by specific reason	Monitors types of technical situations that are impacting operations. By capturing the reasons, performance improvement measures can be implemented.  Reasons could include:  Dropped calls  Poor video quality  Poor audio quality  Diagnostics not working	х	х	х	х	х	х	
13. Scheduled encounters cancelled or not completed due to technical issues: percent of total scheduled encounters and percent by	Scheduled telehealth encounters:     Total scheduled     Total scheduled by type	Monitors types of technical situations that are causing service cancellations. Reasons could include:	х	х	Х	х	х	x	

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	elCU	ED Services	Admin	Educational Services	Selected Indicators
reason (13, 14).	Scheduled telehealth encounters cancelled or not completed due to technical issues: Total Total by reason	<ul> <li>No network connection</li> <li>Dropped calls</li> <li>Poor video quality</li> <li>Poor audio quality</li> <li>Diagnostics not working</li> </ul>							
14. Most frequent times for Telehealth services delivery.	Encounter start time	This has value for "on demand" telehealth services to identify staffing patterns.			х	х			
15. Average time from Telehealth service request to Telehealth encounter scheduled – non high risk.	Encounter request date     Encounter scheduled date	Provides information on scheduling system performance and provider availability.	х	х			х	х	
16. Average time from service request to the on demand provider to start of the encounter – high risk.	Time encounter requested     Time encounter scheduled	Provides information on scheduling system performance and provider availability.			х	х			
17. Average time from identification of need for a Telehealth encounter until S&F package sent.	Date and time of patient image capture     Date and time of Store and Forward     Package Transmission	Store and forward service type specific. This detects patient site performance issues.	х		х	х			
18. Average time from S&F package sent to assessment/ results returned.	Date and time of Store and Forward package transmission     All services     By service type     Date and time of provider response	Store and forward service type specific. This detects remote provider site performance issues.	Х		х	х			
19. Average time per telehealth encounter (including prep and charting): all services and by specific service type.	Start time of encounter Ind time of encounter Specific service type	Provides information on total encounter time at either patient or provider side. Useful for scheduling.	х	х	Х	х	х	х	
20. Average number of video minutes per encounter: total and by	Start time of live video     End time of live video	Provides information on time required for different	х	х	х	х	х	х	

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specific service.	Service type	specialties / services (without pre and post provider activity. Useful for scheduling, service negotiations.							
21. Time required to obtain service telemedicine versus non-telemedicine: total and by specific service.	<ul> <li>Estimated time to in person service delivery Specific Type Service method</li> <li>Date of service telehealth request</li> <li>Date of service telehealth encounter</li> </ul>	Indicates relative availability of telemedicine services; ability to impact service scheduling	х	X	х	х	х	х	
22. Percent of allocated telehealth appointment time used.	Time allocated to Telehealth appointments     Allocated time used for appointments	Measures use of available resources and available resources unused.	х				х	х	
23. Result of telehealth encounter by reason.	Total encounters     Encounter result by reason	Reasons may include:  Corroborated initial diagnosis/treatment plan  Resulted in definitive diagnosis/treatment plan  Confirmed need for face to face visit with remote provider  Confirmed need for urgent/emergent transport  Avoided need for face to face visit with remote provider  Avoided need for urgent/emergent transport  No change in diagnosis or treatment plan  Changed diagnosis or treatment plan	x	x	x	x	X	x	

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24. Telehealth services by delivery method.	<ul> <li>Telehealth encounters completed</li> <li>Total number by delivery method</li> </ul>	Provides distribution by delivery method. Methods could include:  • Live interactive  • Store and Forward  • Hybrid  • Telemetry	х	х	x	х			
25. Percent of patient encounters no subsequent in person encounter was necessary.	Total number of telehealth encounters     Total number of telehealth encounters with no subsequent in-person required	Provides information on how often telehealth visits replaced an office visit?	x	х	х	х		х	
26. Primary diagnosis by service type	Service type     CPT codes for primary diagnosis     CPT codes for secondary diagnosis		х	х	х	х		х	
Home/Chronic Disease monitoring									
27. Improved quality of life scores Aggregate change in quality of life rating; percent improved percent no change percent decreased.	Quality of Life scores	Provides improvement in Quality of Life rates through telehealth use. Balances under patient measures provider.	х	х	х	х	х	х	
28. Physiologic measurements collected by type compared to number indicated in care plan.	Number physiologic measures scheduled for collection     Number physiologic measures collected	Non adherence to care plan by type: human and technology.		х					

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	elCU	ED Services	Admin	Educational Services	Selected Indicators
29. Percent change in admission and readmission rates.	Average readmission rate before Telehealth     Average readmission rate after Telehealth	Provides change in inpatient admissions resulting from telehealth use.		х					
30. Percent change in visits to Primary Care Provider.	Average PCP visit rate before Telehealth     Average PCP visit rate after Telehealth	Provides reduction in PCP visits resulting from telehealth use.		х					
31. Average number of in-home care nurse encounters per episode of care for home monitoring telehealth programs.	Number of in-home nurse encounters     Number of episodes of care	Provides overall utilization on nursing services		х					
32. Nurse contacts per episode of care due to out of range reading NEW	Nurse contacts for out of range readings     Number of episodes of care	Provides information on out of range readings per episode of care		х					
33. Average time between in-home nurse interventions compared to non telehealth	Number of home clinical visits     For telehealth enrollees     For non telehealth enrollees     Number of days between visits     For telehealth enrollees     For non telehealth enrollees	Allows tracking of the length of stable periods		х					
34. Unplanned telehealth encounters by episode of care	Number of unplanned telehealth encounters     Number of episodes of care			х					
35. Average number of nurse encounters per unit of time (hour, shift).	Number of nurse encounters     Unit of time	Provides productivity information		х					

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	elCU	ED Services	Admin	Educational Services	Selected Indicators
elCU									
36. Percent change in mortality rate.	Average mortality rate before Telehealth     Average mortality rate after Telehealth     Average ICU length of stay before	Provides reduction in mortality rate through telehealth use. Requires historical data collection and comparison. A common indicator for effectiveness and cost avoidance			x				
37. Percent change in ICU length of stay.	Telehealth • Average ICU length of stay after Telehealth	Provides reduction in ICU length of stay that in eICU programs use. Required historical data for comparison.			х				
38. Percent change in complications.	Average complication rate before Telehealth     Average complication rate after Telehealth	Provides reduction in complications in elCU programs. Requires historical data collection and comparison. Provides reduction in overall length of stay in elCU programs. Requires historical data for comparison.			х				
38. Percent change in complications.	Average length of stay before Telehealth				х				
Emergency Department									
40. Percent of appropriate TPA Percent reduction in overall length of stay. delivery in allowable timeframe.	Number of patients presenting with stroke symptoms that are eligible for TPA.     Number of patients TPA was administered within the allowable timeframe.	Provides a measure of telehealth impact on delivery of TPA in appropriate cases. Requires historical data comparison.				х			

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	elCU	ED Services	Admin	Educational Services	Selected Indicators
41. Percent change in time required for triage or evaluation in ED.	Time triage or evaluation services requested     Total     By service type     Time triage or evaluation services provided     Total     By service type	Provides measure of change in obtaining triage or evaluations and use of ED beds. Requires historical data comparison.							
Provider Measures									
42. Practitioners referring patients for telehealth: percent of total practitioners.	Number of practitioners     Number of practitioners with telehealth referrals	Provides an indicator of the acceptance and use of telemedicine by referring practitioners.	х	х	х	х		х	
43. Percent of providers that indicated overall satisfaction levels of satisfied or above: total and by reason.	Number of satisfaction instru-ments collected     Number of responses that indi-cate satisfied or above: Total responses Total responses by reason.	Identified overall satisfaction and reasons. Reasons could include:  • Makes efficient use of time  • Integrated into workflow  • Presenter knowledgeable  • Technology is reliable  • Technology is appropriate  • Patient comfortable / cooperative	х	х	х	х	х	х	
44. Percent of providers indicating unsatisfied: total and by specific reason.	Number of satisfaction instruments collected     Number of responses that indicate unsatisfied or below by reason	Detects provider concerns. Reasons my include:  Technology did not perform as expected	х	х	х	х	х	х	

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		<ul> <li>Patient site not prepared</li> <li>Proper video etiquette was not followed</li> <li>Poor patient presentation skills</li> <li>Protocol not followed</li> <li>Necessary information unavailable</li> <li>Ineffective use of time</li> <li>Patient uncooperative</li> </ul>							
45. Percent of patients for whom Telehealth encounter were deemed appropriate.	Total encounters     Inappropriate encounter	An indicator of referral pattern behaviors. Detects opportunities for provider education.	х	х	х	х	х	х	
46. Percent of patients for whom Telehealth encounter were deemed appropriate.	Number of encounters where provider participated in the encounter     Number of providers that indicated increased understanding	This only applies to patient site providers that participated in teleconsultation. This is a measure of effectiveness and impact.	х		х	х			
47. Percent of patient sites indicating satisfied or above and by specific reason.	Number of satisfaction instruments collected     Number of responses that indicate satisfied or above and by specific reason	Identified overall satisfactions and reasons. Reasons could include: o Makes Efficient use of time o Integrated into workflow o Provider knowledgeable o Technology is reliable o Technology isappropriate o Patient comfortable / cooperative	х	х	х	х	х	х	

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	elCU	ED Services	Admin	Educational Services	Selected Indicators
48. Percent of patients indicating unsatisfied: total and by specific reason.	Number of satisfaction instruments collected     Number of responses that indicate unsatisfied or below by specific reason	Detects patient site concerns of concern. Reasons my include:  Technology did not per form as expected Provider site not prepared Proper video etiquette was not followed Poor provider presentation skills Necessary information unavailable neffective use of time	х	х	х	х	х	x	
49. Percent of providers / presenters that are trained to use the system.	Number of Telehealth providers/ presenters in system     Number that received formal training	Identifies training levels.	х	х	х	х	х	х	
50. Percent of providers / presenters that demonstrate adequate ability in telehealth service delivery.	Number of Telehealth providers/ presenters in system     Number that demonstrated skill in telehealth service delivery	Direct observation needs to support assessment of skills. Identifies need for additional training.	х	Х	х	х	х	х	
Patient Measures									
51. Percent of patients that indicated overall satisfaction levels of satisfied or above.	Number of patient responses collected     Number of patient responses with satisfied or above	Identifies overall satisfaction.	х	х	х	х		Х	

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	elCU	ED Services	Admin	Educational Services	Selected Indicators
52. Percent of patients that indicated they would recommend the telehealth system to a friend or family member	Number of patient responses collected     Number of favorable patient responses	Identifies overall satisfaction.	х	х	x	х		х	
Cost Benefit									
53. Estimated reduction or avoidance in travel costs as a result of using Telehealth system: total, by type of transport, and by payer of transport.	Total sessions held     Total travel miles avoided     By patients     By providers     By payer     By service type     Estimated cost of travel miles     By patients     By providers     By payer     By service type	This indicator reflects all types of travel cost avoidance – both patient and provider. Should be captured with each appropriate encounter or by use of algorithm. Many programs develop algorithm to identify where provider or patient would have to travel without telehealth, determine mode of transportation and estimates costs of the transportation including: vehicle charges (personal vehicle, ambulance, public transportation, air ambulance), mileage costs, salary costs while traveling, overtime / swing shift cost etc. Payer types may include patient, health system, insurer, government program.  Provides indicator of the environmental impact	x	х	х	х	х	х	
54. Carbon Footprint Impact	Total travel miles avoided     Total reduction in carbon footprint								

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	elCU	ED Services	Admin	Educational Services	Selected Indicators
		resulting from telehealth services							
55. Net cost and revenue per telehealth service delivery unit: total and by service type.	Net cost of telehealth service delivery     Total cost per unit     Total cost per unit by service type     Net revenue per telehealth service delivery     Total revenue per unit     Total revenue per unit by service type  Total revenue per unit by service type	Provides per unit cost for services provision. Requires work with the organization's Administration and Finance offices to develop and apply a model. Organization creates model customized to specific application and situation. Data elements could include: o cost of equipment, o amortization period, o cost of development, o staffing costso overheado Insuranceo IT supporto trainingo cost of provider services, revenues – direct and indirect	X	x	x	x	X	x	
56. Return on Investment.	Revenue / Gain from Investment in telehealth     Cost associated with Investment in telehealth	Measure to compare the cost of a program with the anticipated gain from the program. Requires work with the organization's Finance Office to develop ROI model and collect data.	х	x	х	х	х	х	
57. Cost Benefit.	List of costs by item	Overall picture of program	Х	х	х	х	Х	Х	

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	elCU	ED Services	Admin	Educational Services	Selected Indicators
	List of benefits with associated financial value – can be both direct and indirect; tangible and intangible	value that allows program to quantify and place a value on tangible and intangible costs and benefits							
58. Percent of total revenue generated by telehealth services NEW	<ul> <li>Total revenues</li> <li>Revenue associated with telehealth service.</li> </ul>	How telemedicine contributes to the overall revenue of the organization. May be useful to look at gross revenue and net revenue	Х	х	х	х	х	х	
59. Percent of services reimbursed: total and service by type	<ul> <li>Total number of telehealth services         Total         Total by type     </li> <li>Total number of reimbursed services         Total         Total by type     </li> </ul>	Provides telehealth specific information on reimbursement	х	x	х	х	х	х	
60. Percent of total provided telehealth services that are not reimbursed.	Total number of encounters  Total number of telehealth services that were reimbursed  Total by service type  Total dollar amount  Total number of services not reimbursed (not billed)  Total by service type  Total dollar amount	Provides information on the number of unpaid telehealth services.	х	х	х	х	х	х	
61. Comparative cost to put 24 hour internist	Cost of telehealth on demand internist     Cost of 24 hour on-site internist								
62. Productivity loss avoided	Estimated hours of work lost due to travel	Requires application of an	х	х	Х	х	Х	х	_
	Estimated cost of travel time	algorithm to associate time savings with productivity loss reduction.	х	х	х	х		х	



## Have you covered everything?

Take a look at the Performance Monitoring Plan. You may see some things to consider before you move on.

	Develop Performance Monitoring Plan Checklist	Yes	No	Unsure
	ı have developed an approach to measure, track, and achieve your target telehealth volume and utilization.			
	have developed a plan to measure success in achieving your project goals, ectives and outcomes.			
	n have determined how you will know what impact telehealth has made in arroganization.			
4. You	have identified data collection methods for obtaining the needed data.			
	ne performance objectives are not being met, you have developed a cess for identifying and implementing the necessary changes.			
	nhave determined how the program improvements will be defined, nned, implemented, tested, and managed.			

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