

**OFFICIAL NOTICE AND AGENDA** of a meeting of the Board or a Committee

A meeting of the **Quality Committee** of the North Central Community Services Program Board will be held at **North Central Health Care, 1100 Lake View Dr., Wausau, WI, Board Room** at **10:30 a.m.**, on **Thursday, July 21, 2016.**

*(In addition to attendance in person at the location described above, Committee members and the public are invited to attend by telephone conference. Persons wishing to attend the meeting by phone should call 715-848-4405 no later than one hour prior to the meeting start time for further instructions.)*

**AGENDA**

1. Call to order
2. Moments of Excellence
3. Action: Approve March 17, 2016 Quality Committee meeting minutes
4. Outcomes Review
  - a. Organizational Outcomes
  - b. Program Specific Outcomes
5. Criminal Justice Outcome Measure Discussion
6. Quality Measures Discussion
7. Closed Session - pursuant to Section 19.85(1)(c) and (f) Wis. Stats. for the purpose of considering employment and performance evaluation of any public employee over which the governmental body exercises responsibility, and preliminary consideration of specific personnel problems, which if discussed in public, would likely have a substantial adverse effect upon the reputation of any person referred to in such problems, including specific review of performance of employees and providers of service and review of procedures for providing services by Agency.
  - a. Report of Investigations
    - i. Corporate Compliance and Ethics
    - ii. Significant Events
8. Motion to come out of closed session
9. Possible announcements regarding issues discussed in closed session
10. 2016 Work Plan Update
11. Process Improvement Project – Crisis Services
12. Annual Review of Confidentiality Statements
13. Future agendas
14. Adjourn

\*Action may be taken on any agenda item.

\*In the event that any individuals attending this meeting may constitute a quorum of another governmental body, the existence of the quorum shall not constitute a meeting as no action by such body is contemplated.

Signed:  /s/ M. Loy  
Presiding Officer or His Designee

COPY OF NOTICE DISTRIBUTED TO:  
Wausau Daily Herald      Antigo Daily Journal  
Tomahawk LeaderMerrill Foto News  
Langlade, Lincoln & Marathon County Clerk Offices  
DATE  07/15/16 TIME  4:00  
VIA:  X FAX  X MAIL  
By:  /s/ D. Osowski

THIS NOTICE POSTED AT:  
NORTH CENTRAL HEALTH CARE  
DATE  07/15/16 Time  4:00 p.m.  
BY  Debbie Osowski

Any person planning to attend this meeting who needs some type of special accommodation in order to participate should call the Administrative Office at 715-848-4422. For TDD telephone service call 715-845-4928.

**NORTH CENTRAL COMMUNITY SERVICES PROGRAM  
QUALITY COMMITTEE MEETING MINUTES**

**March 17, 2016**

**10:30 a.m.**

**NCHC – Wausau Campus**

Present: Darren Bienvenue (by phone), Dr. Eric Penninman, Ben Bliven

Excused: Dr. Gabriel Ticho, Joanne Kelly

Also present: Becky Schultz, Michael Loy, Katlyn Coles, Laura Scudiere, Gary Bezucha, Kim Gochanour

The meeting was called to order at 10:33 a.m.; roll call was noted and a quorum declared. Moments of Excellence were shared. Ben Bliven introduced himself to the committee.

Minutes

- **Motion**/second, Penninman/Bienvenue, to approve the minutes of the January 21, 2016, meeting with the amendment to be made to minutes that list adjourning time of “12:10 a.m.” to change to “12:10 p.m.”. Motion carried.

Outcome Data/Safety

- The Committee reviewed organization-wide and program-specific outcome data. Data measures and opportunities for improvement discussed.
  - Staff vacancy rate continues to show improvement. Employee turnover rate continues to show room for improvement.
  - Continue to see largest number of vacancy rates in Nursing Home with CNA positions and with Dietary Aide positions in Food Services.
  - Patient Experience Satisfaction measures were discussed.
    - Recommendation for future agenda item at next meeting: Review Department Specific patient experience data more in-depth.
  - Community Partner Satisfaction to be presented at next meeting after first quarter results have been reported.
  - Nursing Home Readmission and Psychiatric Hospital Readmission rates are showing continuous improvement.
  - AODA Relapse Rate showing a slight increase. Staff will monitor for 3 point trend.
  - Crisis Treatment Collaborative Outcome Rate data to be presented at next Committee meeting. Awaiting new system implementation and execution for feedback gathering.
  - Criminal Justice Outcome Measure implementation discussed. This measure will be discussed further at next meeting to determine what tools can be used to put metrics to this measure and Committee will determine whether or not to leave this measure on the dashboard at that time.
  - Recidivism Rate for OWI data presented. Within target range and continuing to show positive decrease.
  - Financial measures, Direct Expense/Gross Patient Revenue and Days in Account Receivable, discussed. Increase in Direct Expense/Gross Patient Revenue exceeded budget for February. Financial impact being driven by increase in Behavioral Health Service needs and model restructuring.
  - Discussed NCHC Access measures within Best Practice timeframe.
  - No specific trends at program levels with regard to specific program measures noted.

- Discussed Employee Engagement Survey outcome measures for 2015 and main areas of needed improvement noted.

#### Closed Session

- Due to quorum requirements, the Committee was unable to review and approve the Corporate Compliance and Ethics Reportable Events Investigations and a Closed Session did not take place. These items will be reviewed at the next Committee meeting.

#### Process Improvement Project- Crisis Services

- Process Improvement Project discussed. PowerPoint presentation presented. Short-term immediate actions detailed.
- Current operation updated for Crisis Services reviewed.
- Working toward a “No Refusal Model” for Crisis Services.

#### Emergency Operation & Security Management Review

- Emergency Operation Plan Policy presented.
- Security Management Plan Policy presented.
- Due to time constraints, these agenda items will be reviewed in depth at next Committee meeting.

#### 2016 Action Plan Items

- 2016 Action Plan Items presented, which include:
  - Service Excellence
  - Behavioral Health Center Excellence
  - Electronic Medical Record Operability
- Due to time constraints, the action plan items will be discussed in-depth at the next Committee meeting.

#### Future Agenda Items

- Review Department Specific Dashboard Data during Outcomes Review as they relate to Patient Experience Data.
- Review Emergency Operation and Security Management policies.
- **Motion**/second, Bienvenue/Penniman, to adjourn at 11:49 a.m. Motion carried.

K/C

QUALITY OUTCOME DASHBOARD

DEPARTMENT: NORTH CENTRAL HEALTH CARE

FISCAL YEAR: 2016

PRIMARY OUTCOME GOAL	Continuous Improvement Target	Benchmark	↑ ↓	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YTD	2015
<b>PEOPLE</b>																	
Vacancy Rate	6-8%	N/A	↓	8.0%	5.8%	4.8%	5.2%	3.9%	6.2%							5.9%	7.6%
Employee Turnover Rate*	20-23%	17%	↓	19.6%	29.2%	29.3%	28.4%	26.3%	27.6%							27.6%	28.9%
<b>SERVICE</b>																	
Patient Experience: Satisfaction Percentile Ranking	70-84th Percentile	N/A	↑	53rd	48th	45th	46th	53rd	48th							48th	51st
Community Partner Satisfaction	75-80%	N/A	↑	\	\	77%	\	\	72%							75%	76%
<b>CLINICAL</b>																	
Nursing Home Readmission Rate	11-13%	18.2%	↓	13.8%	6.7%	12.0%	10.7%	14.8%	21.1%							12.7%	13.7%
Psychiatric Hospital Readmission Rate	9-11%	16.1%	↓	12.8%	11.1%	3.2%	5.0%	7.2%	11.4%							8.4%	10.8%
AODA Relapse Rate	18-21%	40-60%	↓	30.0%	33.3%	20.7%	25.0%	24.3%	27.3%							26.8%	20.7%
<b>COMMUNITY</b>																	
Crisis Treatment: Collaborative Outcome Rate	90-97%	N/A	↑	\	\	\	\	100.0%	97.9%							99.1%	N/A
Access to Behavioral Health Services	90-95%	NA	↑	58%	65%	87%	86%	92%	93%							78%	73%
Recidivism Rate for OWI	27-32%	44.7%	↓	22.6%	20.5%	29.2%	28.2%	18.2%	7.7%							22.2%	26.4%
<b>FINANCE</b>																	
*Direct Expense/Gross Patient Revenue	58-62%	N/A	↓	71%	65%	66%	64%	65%	67%							67%	63%
Days in Account Receivable	60-65	54	↓	70	65	64	64	58	51							51	68

KEY: ↑ Higher rates are positive

↓ Lower rates are positive

\* Monthly Rates are Annualized

Target is based on a 10%-25% improvement from previous year performance or industry benchmarks.

**NCHC OUTCOME DEFINITIONS**

PEOPLE

<b>Vacancy Rate</b>	Total number of vacant positions as of month end divided by total number of authorized positions as of month end.
<b>Employee Turnover Rate</b>	Percent of employee terminations (voluntary and involuntary) of the total workforce. Monthly figures represent an annualized rate. <i>Benchmark: Society of Human Resource Management (SHRM) for the north central region of the U.S.</i>

SERVICE

<b>Patient Experience: Satisfaction Percentile Ranking</b>	Comparison rate (to other organizations in the Health Stream database) of the percent of level 9 and 10 responses to the Overall rating question on the survey. <i>Benchmark: HealthStream 2015 Top Box Percentile</i>
<b>Community Partner Satisfaction Percent</b>	Percentage of "Good and Excellent" responses to the Overall Satisfaction question on the survey.

CLINICAL

<b>Nursing Home Readmission Rate</b>	Number of residents re-hospitalized within 30 days of admission to nursing home / total admissions. <i>Benchmark: American Health Care Association/National Center for Assistive Living (AHCA/NCAL) Quality Initiative</i>
<b>Psychiatric Hospital Readmission Rate</b>	Percent of patients who are readmitted within 30 days of discharge from the Inpatient Behavioral Health hospital for Mental Health primary diagnosis. <i>Benchmark: Medicare Psychiatric Patients &amp; Readmissions in Inpatient Psychiatric Facility Prospective Payment System, May, 2013, The Moran Company</i>
<b>AODA Relapse Rate</b>	Percent for patients admitted to Ambulatory Detoxification or the Behavioral Health hospital for detoxification then readmitted within 30 days of discharge for repeat detoxification. <i>Benchmark: National Institute of Drug Abuse: Drugs, Brains, and Behavior: The Science of Addiction</i>

COMMUNITY

<b>Crisis Treatment: Collaborative Decision Outcome Rate</b>	Total number of positive responses(4 or 5 response on a 5 point scale) on the collaboration survey distributed to referring partners in each encounter in which a referral occurs.
<b>NCHC Access</b>	% of clients obtaining services within the Best Practice timeframes in NCHC programs. <ul style="list-style-type: none"> <li>• Adult Day Services - within 2 weeks of receiving required enrollment documents</li> <li>• Aquatic Services - within 2 weeks of referral or client phone requests</li> <li>• Birth to 3 - within 45 days of referral</li> <li>• Community Corner Clubhouse - within 2 weeks</li> <li>• Community Treatment - within 60 days of referral</li> <li>• Outpatient Services - within 14 days of referral</li> <li>• Prevocational Services - within 2 weeks of receiving required enrollment documents</li> <li>• Residential Services - within 1 month of referral</li> </ul>
<b>Recidivism Rate for OWI</b>	Percentage of people that receive their OWI services from NCHC and then reoffend. <i>Benchmark: 2012-OWI Related Convictions by Violation County and Repeat Offender Status, State of Wisconsin DOT, Bureau of Driver Service, Alcohol &amp; Drug Review Unit</i>

FINANCE

<b>Direct Expense/Gross Patient Revenue</b>	Percentage of total direct expense compared to gross revenue.
<b>Days in Account Receivable</b>	Average number of days for collection of accounts. <i>Benchmark: WIPFLI, sources 2015 Almanac of Hospital Financial and Operating Indicators published by Optum-Psychiatric Hospitals, 2013 data.</i>

## 2016 - Primary Dashboard Measure List

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
NORTH CENTRAL HEALTH CARE OVERALL	People	Vacancy Rate	↓	6-8%	5.9%	N/A
		Employee Turnover Rate*	↓	20-23%	27.6%	28.9%
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		Community Partner Satisfaction	↑	75-80%	75.00%	76%
	Clinical	Nursing Home Readmission Rate	↓	11-13%	12.7%	13.7%
		Psychiatric Hospital Readmission Rate	↓	9-11%	8.4%	10.8%
		AODA Relapse Rate	↓	18-21%	26.8%	20.7%
	Community	Crisis Treatment: Collaborative Outcome Rate	↑	90-97%	99.10%	N/A
		Access to Behavioral Health Services	↑	90-95%	78%	73%
		Recidivism Rate for OWI	↓	27-32%	22.2%	26.4%
	Finance	Direct Expense/Gross Patient Revenue	↓	58-62%	67.0%	63%
Days in Account Receivable		↓	60-65	51	68	

### HUMAN SERVICES OPERATIONS

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
ADULT DAY/ PREVOCATIONAL/RESIDENTIAL SERVICES	People	Employee Engagement Adult Day/Prevocational/Residential Percentile Rank	↑	75-80th Percentile	\	64.5
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		ADS/Prevocational/Residential Services Patient Experience % 9/10 Responses	↑		87.7% (93/106)	86.3%
	Clinical	Community Living Employee's job competency proficiency Rate	↑	75%-80%	\	N/A
	Community					
	Finance	ADS/Prevocational Direct Expense/Gross Patient Revenue	↓	51-55%	52.92%	66.19%
Residential Direct Expense/Gross Patient Revenue		↓	74-78%	72.87%	76.33%	

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
AQUATIC SERVICES	People	Employee Engagement Aquatic Services Percentile Rank	↑	75-80th Percentile	\	65.2
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		Aquatic Services Patient Experience Percent 9/10 Responses	↑		94.1% (112/119)	94.4%
	Clinical					
	Community	Access to Aquatic Services	↑	90-95%	98.2%	92%
	Finance	Direct Expense/Gross Patient Revenue	↓	38-42%	37.33%	40.61%

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
BIRTH TO 3	People	Employee Engagement Birth to 3 Percentile Rank	↑	75-80th Percentile	\	69.7
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		Birth to 3 Patient Experience Percent 9/10 Responses	↑		89.7% (52/58)	91.6%
	Clinical					
	Community	Access- From time of referral to time of treatment plan development. (45 days)	↑	90-95%	99%	100%
	Finance	Direct Expense/Gross Patient Revenue	↓	116-122%	135.9%	136.73%

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
COMMUNITY CORNER CLUBHOUSE	People	Employee Engagement Community Corner Clubhouse Percentile Rank	↑	75-80th Percentile	\	0.0
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		Community Corner Clubhouse Patient Experience Percent 9/10 Responses	↑		0	60.4%
	Clinical	Active Membership Daily Attendance	↑	25-30%	28.8%	N/A
	Community					
	Finance	Direct Expense/Gross Patient Revenue	↓	124-130%	78.1%	82.89%

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
COMMUNITY TREATMENT	People	Employee Engagement Community Treatment Percentile Rank	↑	75-80th Percentile	\	67.1
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		Community Treatment Patient Experience Percent 9/10 Responses	↑		76.6% (98/128)	72.9%
	Clinical					
	Community	Access to Community Treatment Services	↑	90-95%	76%	80%
	Finance	Direct Expense/Gross Patient Revenue	↓	88-92%	75.9%	83.34%

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
CRISIS CBRF/ LAKESIDE RECOVERY (MMT)	People	Employee Engagement Adult Day/Prevocational/ Residential Percentile Rank	↑	75-80th Percentile	\	56.6
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		Crisis CBRF/Lakeside Recovery Patient Experience Percent 9/10 Responses	↑		74.8% (86/115)	62.1%
	Clinical	At 7 day survey- patient kept their outpatient appointment	↑	75%	66.67%	N/A
	Community					
	Finance	CBRF Direct Expense/Gross Patient Revenue	↓	14-18%	18.96%	8.86%
		Lakeside Recovery Direct Expense/Gross Patient Revenue	↓	287-293%	18.52%	N/A

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
CRISIS SERVICES	People	Employee Engagement Crisis Services Percentile Rank	↑	75-80th Percentile	\	56.6
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		Crisis Services Patient Experience Percent 9/10 Responses	↑		82.4% (28/34)	78.9%
	Clinical					
	Community	Community Partner Survey	↑	80-85%	58%	63%
	Finance	Direct Expense/Gross Patient Revenue	↓	362-368%	411.76%	339.22%

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
INPATIENT BEHAVIORAL HEALTH	People	Employee Engagement Inpatient Behavioral Health Percentile Rank	↑	75-80th Percentile	\	57.3
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		Inpatient BH Patient Experience Percent 9/10 Responses	↑		38.3% (125/326)	46.6%
	Clinical	Medication Errors / Patient Days	↓	0.15-0.3%	2.38%	N/A
	Community					
	Finance	Direct Expense/Gross Patient Revenue	↓	47-51%	56.36%	60.66%

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
OUTPATIENT SERVICES	People	Employee Engagement Outpatient Services Percentile Rank	↑	75-80th Percentile	\	64.1
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		Outpatient Services Patient Experience Percent 9/10 Responses	↑		69.7% (129/185)	64.4%
	Clinical					
	Community	Outpatient Services Access	↑	90-95%	69%	64%
	Finance	Direct Expense/Gross Patient Revenue	↓	68-72%	81.30%	75.34%

#### 2016 NURSING HOME OPERATIONS

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
MOUNT VIEW CARE CENTER OVERALL	People	Employee Engagement MV Overall Percentile Rank	↑	75-80th Percentile	\	71.5
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		MVCC Overall Patient Experience Percent 9/10 Responses	↑		68.0% (115/169)	72.3%
	Clinical	Fall Rate	↓	5.5-5.8	5.3	5.80
	Community					
	Finance	Direct Expense/Gross Patient Revenue	↓	47-51%	63.42%	57.88%



Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
POST-ACUTE CARE	People	Employee Engagement Post-Acute Care Percentile Rank	↑	75-80th Percentile	\	66.2
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		Post-Acute Care Patient Experience Percent 9/10 Responses	↑		64.3% (31/48)	71.2%
	Clinical	Fall Rate	↓	4.2 - 4.5	4.1	4.5
	Community					
	Finance	Direct Expense/Gross Patient Revenue	↓	65-69%	81.3%	66.39%

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
LONG TERM CARE	People	Employee Engagement Long Term Care Percentile Rank	↑	75-80th Percentile	\	63.6
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		Long Term Care Patient Experience Percent 9/10 Responses		70%-80%	54.2% (32/59)	55.9%
	Clinical	Fall Data	↓	4.5 - 4.8	3.1	4.8
	Community					
	Finance	Direct Expense/Gross Patient Revenue	↓	47-51%	60.20%	59.27%

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
GARDENSIDE - EVERGREEN	People	Employee Engagement Gardenside - Evergreen Care Percentile Rank	↑	75-80th Percentile	\	72.8
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		Legacies by the Lake Patient Experience Percent 9/10 Responses	↑		83.9% (52/62)	88.2%
	Clinical	Fall Rate	↓	4.4 - 4.7	6.1	4.7
	Community					
	Finance	Legacies Overall Direct Expense/Gross Patient Revenue	↓	34-38%	57.31%	51.11%

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
LAKEVIEW HEIGHTS	People	Employee Engagement Lakeview Heights Percentile Rank	↑	75-80th Percentile	\	72.8
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
	Clinical	Legacies by the Lake Patient Experience Percent 9/10 Responses	↑		82.1% (32/39)	88.2%
	Community	Fall Rate	↓	7.0 - 7.3	6.8	7.3
	Finance	Legacies Overall Direct Expense/Gross Patient Revenue	↓	34-38%	59.54%	51.11%

2016 SUPPORT SERVICES

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
ADULT PROTECTIVE SERVICES	People	Employee Engagement Adult Protective Services Percentile Rank	↑	75-80th Percentile	\	85.1
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		Adult Protective Services Patient Experience Percent 9/10 Responses	↑		88.0% (88/100)	89.4%
	Clinical	% Of At Risk Investigations closed within 30 days.	↑	70-80%	76% (217/286)	68%
	Community					
	Finance	Expense Budget	↓	\$432607 - \$458564	\$428,384	\$442,711

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
COMMUNICATION & MARKETING	People	Employee Engagement Administrative Support/ HR/Communication Percentile Rank	↑	75-80th Percentile	\	78.4
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
	Clinical					
	Community	Facebook Ad Campaign Likes Total	↑	50-75% Increase	146%	N/A
	Finance	Expense Budget	↓	\$177120 - \$187747	\$196,148	\$187,945

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
ESS- HOUSEKEEPING	People	Employee Engagement ESS- Housekeeping Percentile Rank	↑	75-80th Percentile	\	78.7
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		Housekeeping Patient Experience Percent Excellent Responses	↑		61.5% (64/104)	68.4%
		Weekly room checks	↑	70-80%	78%	N/A
	Clinical					
	Community					
	Finance	Expense Budget	↓	\$1143725 - \$1203922	\$1,040,741	\$130,342

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
ESS - LAUNDRY	People	Employee Engagement ESS -Laundry Percentile Rank	↑	75-80th Percentile	\	68.3
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		Laundry Patient Experience Percent Excellent Responses			42.4% (59/139)	39.9%
		Reduce linen shortages (YTD Average calls)	↓	10-12 calls	6	N/A
	Clinical					
	Community					
	Finance	Expense Budget	↓	\$392803- \$413477	\$152,817	\$358,188

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
ESS - MAINTENANCE - GROUNDS	People	Employee Engagement ESS-Maintenance Percentile Rank	↑	75-80th Percentile	\	83.4
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		Maintenance/Grounds Patient Experience Percent Excellent Responses			57% (57/100)	56.4%
		Preventative Maintenance Monthly Service	↑	80-90%	100%	NA
	Clinical					
	Community					
	Finance	Expense Budget	↓	\$1755207 - \$1847587	\$1,435,034	\$1,530,078

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
ESS - TRANSPORTATION	People	Employee Engagement ESS- Transportation Percentile Rank	↑	75-80th Percentile	\	72.5
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
	Clinical					
	Community					
	Finance	Expense Budget	↓	\$70818 - \$74546	\$15,771	\$41,125

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
ENVIRONMENTAL SERVICES OVERALL	People	Employee Engagement ESS Overall Percentile Rank	↑	75-80th Percentile	\	77.9
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		Environmental Services Overall Patient Experience Percent Excellent Responses			54.3% (163/300)	49.0%
		Environmental rounds complete campus monthly	↑	80-90%	93%	N/A
	Clinical					
	Community					
	Finance	Expense Budget	↓	\$3497290- \$3707128	\$3,038,218	\$3,001,938

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
HEALTH INFORMATION	People	Employee Engagement Health Information Percentile Rank	↑	75-80th Percentile	\	69.8
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
	Clinical	Timeliness of chart completion (BHS/NH records within 25 days post discharge)	↑	70-75%	87.2%	N/A
	Community					
	Finance	Expense Budget	↓	\$352483 - \$373632	\$333,426	

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
HUMAN RESOURCES	People	Employee Engagement Administrative Support/HR/Quality Percentile Rank	↑	75-80th Percentile	\	78.4
		Employee Vacancy Rate	↓	6-8%	5.9%	N/A
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
	Clinical					
	Community					
Finance	Expense Budget	↓	\$935007-\$991107	\$873,444	\$980,778	

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
NUTRITIONAL SERVICES	People	Employee Engagement Nutritional Services Percentile Rank	↑	75-80th Percentile	\	58.5
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		Nutritional Services Patient Experience Percent Excellent Responses	↑		53.1% (51/96)	45.5%
		Nutritional Services External Customer Satisfaction Survey (HealthStream)	↑	90-95%	48.8%	45.5%
	Clinical					
	Community					
Finance	Expense Budget	↓	\$2510068 - \$2660673	\$2,710,932	\$2,673,728	

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
PHARMACY	People	Employee Engagement Pharmacy Percentile Rank	↑	75-80th Percentile	\	68.8
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
	Clinical	Pharmacy Medication Error Rate	↓	0.081%-0.090%	0.02%	0.050%
	Community					
	Finance	Direct Expense/Gross Patient Revenue	↓	34-38%	47.05%	41.58%

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
QUALITY	People	Employee Engagement Administrative Support/HR/Quality/ Volunteer Percentile Rank	↑	75-80th Percentile	\	78.4
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
	Clinical	Percent Significant Events	↓	2.25-2.5%	2.4%	N/A
	Community					
	Finance	Expense Budget	↓	\$690785 - \$732232	\$708,926	\$569,842

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
Volunteer Services	People	Employee Engagement Administrative Support/HR/Quality/ Volunteer Percentile Rank	↑	75-80th Percentile	\	78.4
		Net New Volunteers	↑	24-37	11	N/A
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
	Clinical					
	Community					
Finance	Direct Expense Budget	↓	\$89,215-\$94,568	\$95,580	\$89,520	

2016 - FINANCIAL DIVISION

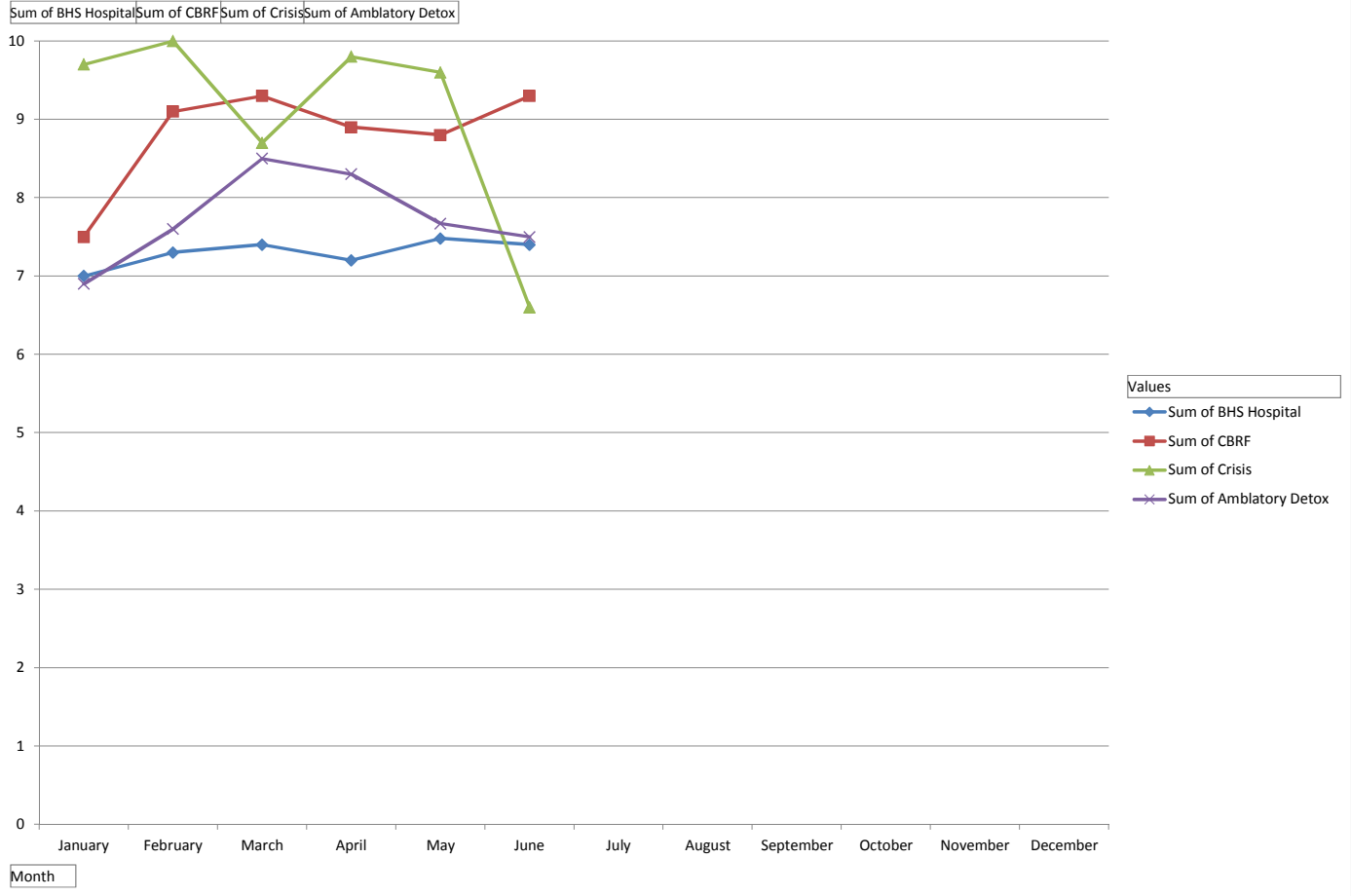
Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
BUSINESS OPERATIONS	People	Employee Engagement Financial & Information Division Percentile Rank	↑	75-80th Percentile	\	69.8
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
	Clinical					
	Community					
	Finance	Expense Budget (Annualized)	↓	\$763782 - \$809609	\$828,520	\$706,943.0
Days in Accounts Receivable		↓	60-65	51	68	

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
DEMAND TRANSPORTATION	People	Employee Engagement Financial & Information Division Percentile Rank	↑	75-80th Percentile	\	69.8
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
	Clinical	Double Occupancy Pick-up (YTD Average)	↑	11-13	9	10/month Average
	Community					
	Finance	Direct Expense/Gross Patient Revenue	↓	355-361%	239.07%	205.83%

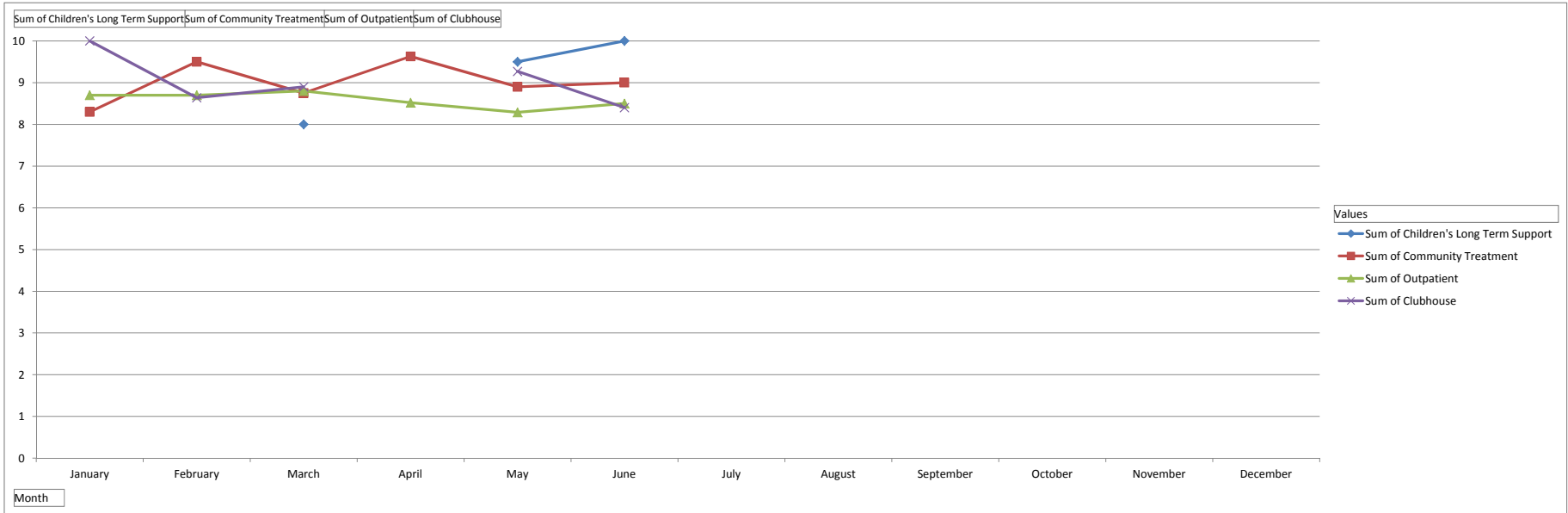
Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
INFORMATION SERVICES	People	Employee Engagement Financial & Information Division Percentile Rank	↑	75-80th Percentile	\	69.8
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
	Clinical					
	Community					
	Finance	Expense Budget	↓	\$2232150 - \$2366080	\$2,223,622	\$2,308,637
Days in Account Receivable		↓	60-65	51	68	

Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
PATIENT ACCOUNTS and ENROLLMENT SERVICES	People	Employee Engagement Financial & Information Division Percentile Rank	↑	75-80th Percentile	\	69.8
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
	Clinical					
	Community					
	Finance	Expense Budget	↓	\$830109 - \$879916	\$800,050	\$798,791
Days in Account Receivable		↓	60-65	51	68	

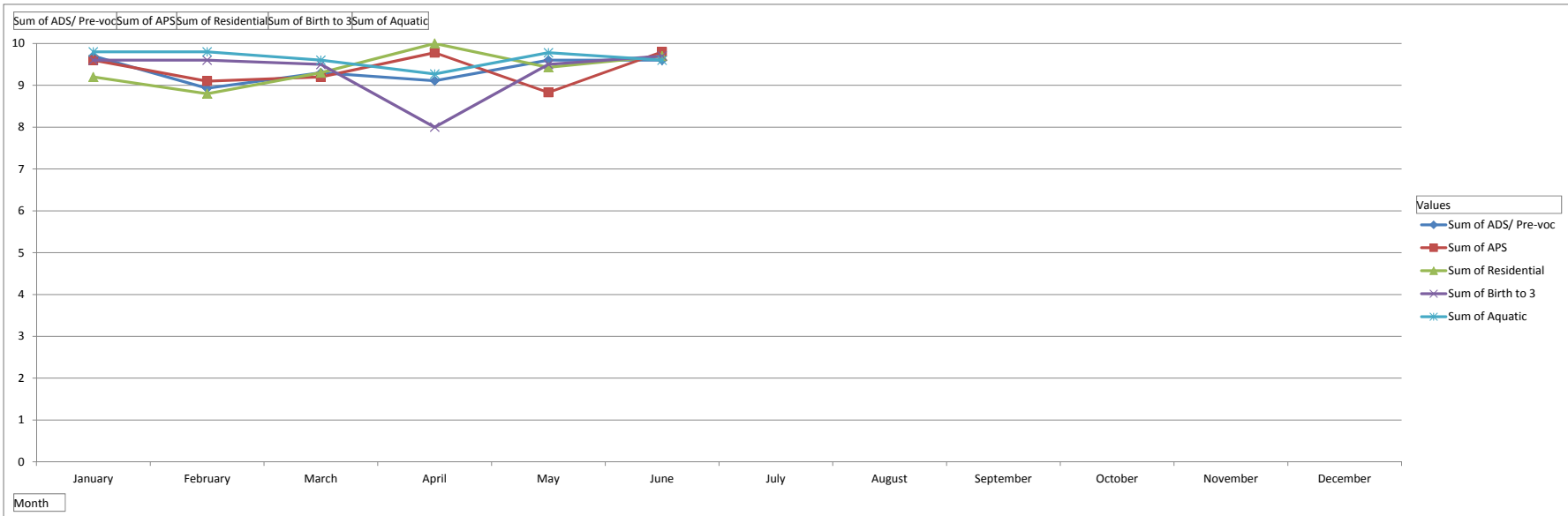
Department	Domain	Outcome Measure		Target Level	2016 YTD	2015 Year End
PURCHASING	People	Employee Engagement Financial & Information Division Percentile Rank	↑	75-80th Percentile	\	69.8
	Service	Patient Experience: Satisfaction Percentile Ranking	↑	70-84th Percentile	48	51st
		All Packages are delivered the same day as they arrive	↑	97-99%	98%	96%
	Clinical					
	Community					
Finance	Expense Budget	↓	\$212536 - \$225289	\$221,500	\$222,456	



Row Labels	Sum of BHS Hospital	Sum of CBRF	Sum of Crisis	Sum of Ambulatory Detox
January	7	7.5	9.7	6.9
February	7.3	9.1	10	7.6
March	7.4	9.3	8.7	8.5
April	7.2	8.9	9.8	8.3
May	7.48	8.8	9.6	7.67
June	7.4	9.3	6.6	7.5
July				
August				
September				
October				
November				
December				
<b>Grand Total</b>	<b>43.78</b>	<b>52.9</b>	<b>54.4</b>	<b>46.47</b>

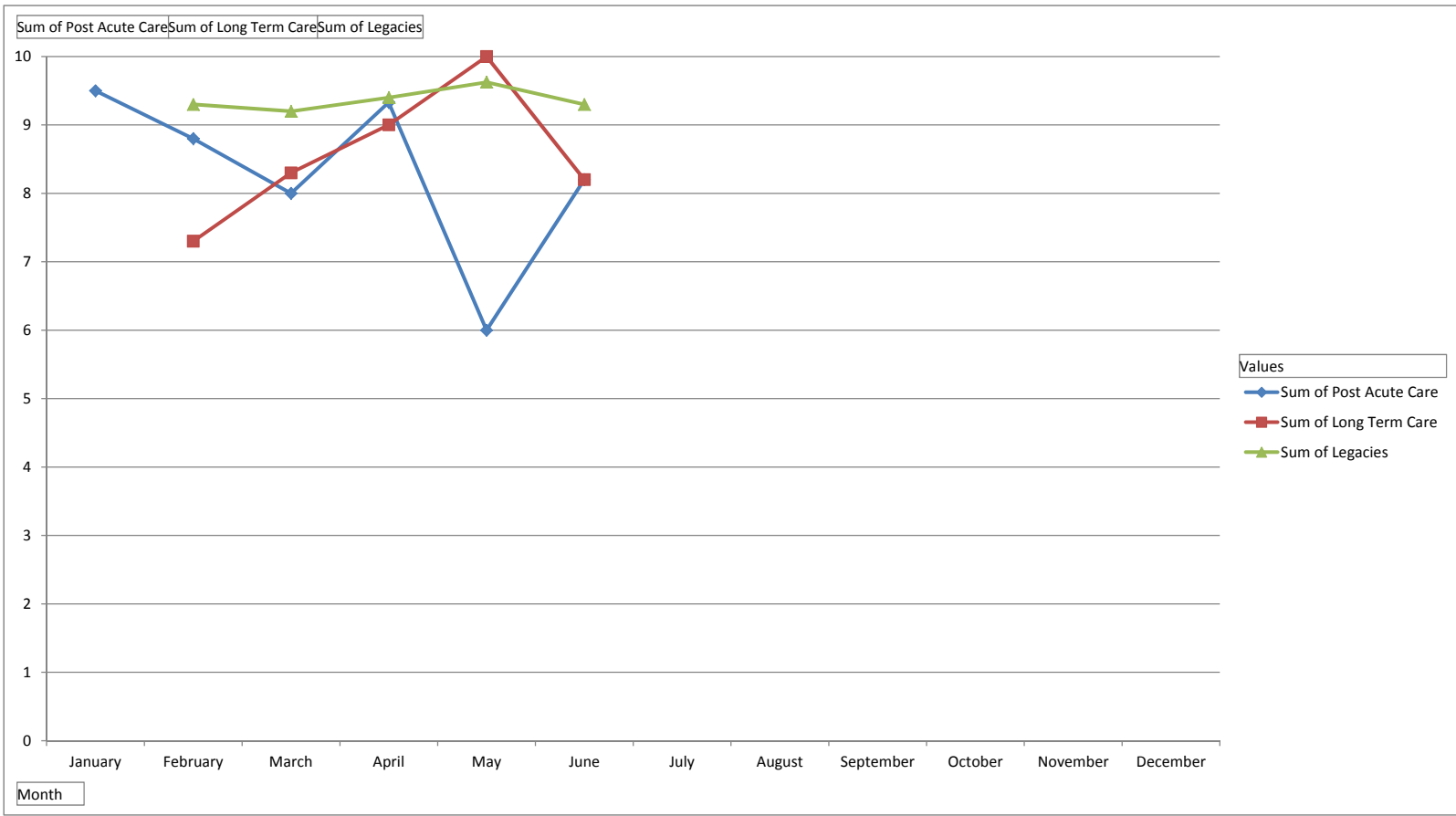


Row Labels	Sum of Children's Long Term Support	Sum of Community Treatment	Sum of Outpatient	Sum of Clubhouse
January		8.3	8.7	10
February		9.5	8.7	8.64
March	8	8.75	8.8	8.9
April		9.63	8.52	
May	9.5	8.9	8.29	9.27
June	10	9	8.5	8.4
July				
August				
September				
October				
November				
December				
<b>Grand Total</b>	<b>27.5</b>	<b>54.08</b>	<b>51.51</b>	<b>45.21</b>



Row Labels	Sum of ADS/ Pre-voc	Sum of APS	Sum of Residential	Sum of Birth to 3	Sum of Aquatic
January	9.7	9.6	9.2	9.6	9.8
February	8.93	9.1	8.8	9.6	9.8
March	9.3	9.2	9.3	9.5	9.6
April	9.11	9.78	10	8	9.27
May	9.6	8.83	9.43	9.5	9.78
June	9.6	9.8	9.7	9.7	9.6
July					
August					
September					
October					
November					
December					
<b>Grand Total</b>	<b>56.24</b>	<b>56.31</b>	<b>56.43</b>	<b>55.9</b>	<b>57.85</b>





Row Labels	Sum of Post Acute Care	Sum of Long Term Care	Sum of Legacies
January	9.5		
February	8.8	7.3	9.3
March	8	8.3	9.2
April	9.33	9	9.4
May	6	10	9.625
June	8.2	8.2	9.3
July			
August			
September			
October			
November			
December			
<b>Grand Total</b>	<b>49.83</b>	<b>42.8</b>	<b>46.825</b>

# Measuring Population Health Outcomes

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PEER REVIEWED

## Abstract

An ideal population health outcome metric should reflect a population's dynamic state of physical, mental, and social well-being. Positive health outcomes include being alive; functioning well mentally, physically, and socially; and having a sense of well-being. Negative outcomes include death, loss of function, and lack of well-being. In contrast to these health outcomes, diseases and injuries are intermediate factors that influence the likelihood of achieving a state of health. On the basis of a review of outcomes metrics currently in use and the availability of data for at least some US counties, I recommend the following metrics for population health outcomes: 1) life expectancy from birth, or age-adjusted mortality rate; 2) condition-specific changes in life expectancy, or condition-specific or age-specific mortality rates; and 3) self-reported level of health, functional status, and experiential status. When reported, outcome metrics should present both the overall level of health of a population and the distribution of health among different geographic, economic, and demographic groups in the population.

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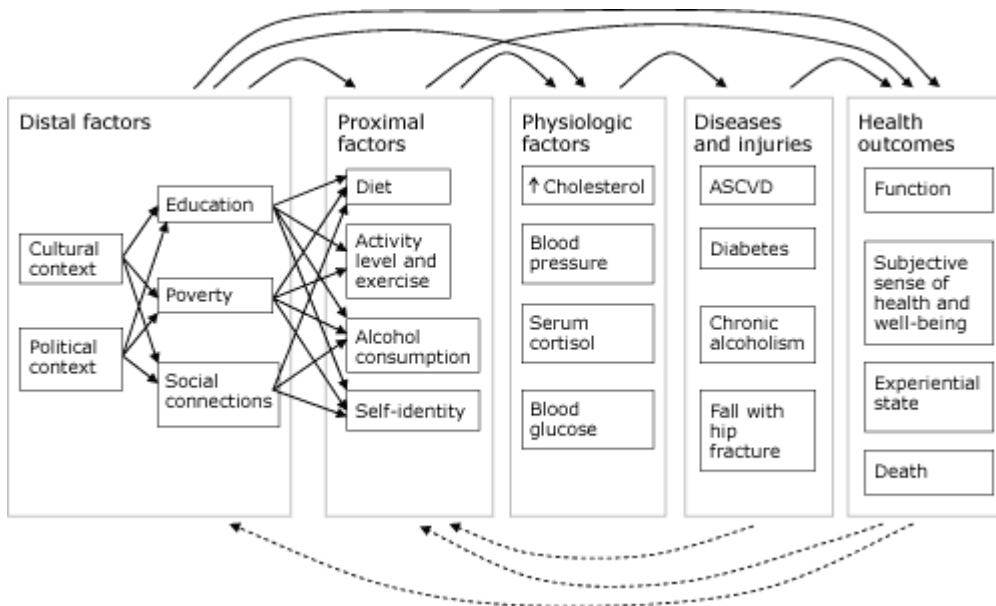
*By far, the most fundamental use of summary measures of population health is to shift the centre of gravity of health policy discourse away from the inputs . . . and throughputs . . . of the health system towards health outcomes for the population. This is not to imply that the resources used and activities undertaken by national or regional health systems are unimportant; quite the contrary. But our understanding of their roles and importance is more appropriate if guided by the real "bottom line," namely their influence on population health.*

Michael C. Wolfson (1)

## Definitions and Introduction

The World Health Organization defines health as "the state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (2). To achieve this vision of health for its members, a healthy society must establish and sustain conditions, including a healthful natural and built environment, and equitable social and economic policies and institutions, that ensure the "happiness, harmonious relations, and security of all [its] peoples" (2,3). Positive health outcomes for people include being alive; functioning well mentally, physically, and socially; and having a sense of well-being.

The level and distribution of health outcomes in populations result from a complex web of cultural, environmental, political, social, economic, behavioral, and genetic factors (Figure). In this causal web, diseases and injuries are intermediate factors, rather than outcomes, that may influence a person's health. Lung cancer, for example, has a substantial effect on physical function and lifespan, while first-degree sunburn has little effect. Health outcome metrics are standards for measuring health outcomes. Recommending a set of metrics for monitoring a population's health outcomes — as opposed to a person's health outcomes — is the objective of this essay.



**Figure.** A causal web that illustrates various factors influencing health outcomes and interactions among them. Solid arrows represent potential causal relationships between factors, diseases, and outcomes. Dashed arrows represent potential feedback from outcomes and diseases on proximal and distal factors. Distal and proximal factors operate through both intermediate factors and directly on health outcomes. For example, a person's level of education can directly influence his or her subjective sense of health and level of social function and also influence intermediate factors, such as diet and exercise. Similarly, the understanding that death or loss of function may occur as the result of a person's lifestyle or social and economic factors, such as education and poverty, may influence those factors through either behavior change or changes in social or economic policy. Examples of factors, diseases, and injuries were chosen to provide a sense of the breadth of available factors. To improve readability, the relationships among proximal factors, physiologic factors, diseases and injuries, and health outcomes have been simplified. Adapted from references 4-6. Abbreviation: ASCVD, atherosclerotic cardiovascular disease.

Three approaches to measuring population health outcomes are available: 1) aggregating health outcome measurements made on people into summary statistics, such as population averages or medians; 2) assessing the distribution of individual health outcome measures in a population and among specific population subgroups; and 3) measuring the function and well-being of the population or society itself, as opposed to individual members. According to the definition of a healthy population, the third approach is the most appropriate because it focuses on how well the population produces societal-level conditions that optimally sustain the health of all people. These societal-level conditions, although not yet fully characterized or understood, most likely include an equitable distribution of power, opportunity, and resources among a population's members; social connections and interactions built on norms of reciprocity and trustworthiness (3); and environmental policies and practices that sustain the quality of the population's land, water, air, native vegetation, and animal life. These societal-level conditions may be viewed as social, economic, political, and environmental determinants of health, rather than as health outcomes, and as such are addressed by other articles in this issue of *Preventing Chronic Disease*. I focus on approaches to assessing population health outcomes in which measures of population health are constructed from the aggregation of individual-level health measures, such as mortality, functional status, and self-perceived health.

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## Basic Outcome Metrics for Population Health

### Measures of mortality, life expectancy, and premature death

#### Box 1. Examples of Population Health Outcome Metrics Based on Mortality or Life Expectancy

##### Mortality

Crude mortality rate
Age-adjusted mortality rates (AAMR)
Age-specific mortality rate
Neonatal (<28 d)
Infant (<1 y) (infant deaths per 1,000 live births)
Under 5 y
Adult (15-60 y)
Other characteristic-specific mortality rates
State- or county-specific
Sex-specific
Race-specific
Condition-specific mortality rates and similar measures
Disease-specific mortality rate
Injury-specific mortality rate
Leading causes of death
Smoking-attributable mortality (number of deaths)
Maternal mortality ratio
Occupational class-specific mortality rate
<b>Life expectancy</b>
Life expectancy at birth
Life expectancy at age 65 y
<b>Premature mortality</b>
Years of potential life lost
Premature mortality rate
<b>Summary measures of population health</b>
Health-adjusted life expectancy at birth (y)
Quality-adjusted life expectancy
Years of healthy life
Healthy life years
Disability-adjusted life years
Quality-adjusted life years
<b>Inequality measures</b>
Geographic variation in AAMR among counties in a state (standard deviation of county AAMR/state AAMR)
Mortality rate stratified by sex, ethnicity, income, education level, social class, or wealth
Life expectancy stratified by sex, ethnicity, income, education level, social class, or wealth

<b>Box 2. Examples of Population Health Outcome Metrics Based on Subjective (Self-Perceived) Health State, Psychological State, or Ability to Function<sup>a</sup></b>
<b>Health state</b>
Percentage of adults who report fair or poor health
Percentage of children reported by their parents to be in fair or poor health
Mean number of physically or mentally unhealthy days in the past 30 days (adult self-report)

Mean number of mentally unhealthy days in the past 30 days (adult self-report)
Mean number of physically unhealthy days in the past 30 days (adult self-report)
<b>Experiential and psychological state</b>
Percentage of adults with serious psychological distress (score $\geq 13$ on the K6 scale)
Percentage of adults who report joint pain during the past 30 days (adult self-report)
Percentage of adults who are satisfied with their lives
<b>Ability to function</b>
Percentage of adults who report a disability (for example, limitations of vision or hearing, cognitive impairment, lack of mobility)
Mean number of days in the past 30 days with limited activity due to poor mental or physical health (adult self-report)
<sup>a</sup> Categories adapted from reference 9.

People and societies value life and health, although the relative value placed on long life versus well-being during life varies. Mortality and life expectancy are 2 basic measures of population health (Box 1).

The number of deaths that occur in a population during a period of time (usually 1 year) divided by the size of the population is the population's crude mortality. Because age is such a strong predictor of death and the age distributions of members of different populations vary, a population's mortality rate is commonly adjusted by using a standard age distribution to produce an age-adjusted mortality rate. The age-adjusted mortality rate allows comparison of mortality across different populations. One may also calculate mortality rate for a group in a population on the basis of a specific characteristic, such as age, sex, or geographic area, to yield a characteristic-specific mortality rate. Another method of assessing the effect of mortality on a population is to calculate the life expectancy of its members. Typically, this is calculated as the life expectancy at birth, although it may be calculated as the remaining life expectancy for any given age. Measures of premature death, including years of potential life lost and the premature mortality rate, quantify mortality among people younger than a particular age, typically 65 or 75 years.

Although these measures provide information about mortality and longevity, they provide no information about the contribution of specific diseases, injuries, and underlying conditions (for example, water quality, poverty, social isolation, and diet) to death, for which actions might be taken to prolong life. For this reason, disease-specific mortality rates are frequently used to illustrate the contribution of specific diseases to population mortality. Recent work extends this concept and proposes methods and measures for estimating the contributions of more fundamental causes to mortality, such as the distal and proximal factors exemplified in the causal web of the Figure (5,7,8).

## Measures of health, function, and subjective well-being

Societies and their members typically value health both subjectively (freedom from pain and suffering, joy, happiness, sense of self-worth and value to others) and objectively (ability to perform physical, mental, and social tasks) (Box 2). Measuring health in a standardized way that allows comparisons among people, countries, and cultures and over time is challenging. Various approaches, some of which have proved controversial, have been developed and used in the past 40 years. They include methods to assess and classify the health, function, and disability of members of a population, for example, the International Classification of Functioning, Disability, and Health (10), and methods to estimate the overall health of populations.

Measurements of self-perceived or "self-rated" health, functional status, and experiential state typically rely on population health surveys, such as the National Health Interview Survey (NHIS) and the Behavioral Risk Factor Surveillance System (BRFSS) in the United States, the European Union's Statistics on Income and Living Conditions, and the World Health Organization's World Health Survey. Care must be taken, however, when comparing metrics derived from different surveys: the nature and wording of questions and the time period covered may differ. Furthermore, the interpretation of health categories, such as "good" and "poor," may vary culturally among countries or even among different populations in a country. The authors of a recent study of 4 US national surveys even questioned whether self-rated

health is a suitable measure for tracking population health over time because of inconsistencies in self-ratings over time among surveys and certain population subgroups (11).

Health-related quality of life (HRQL) indices are also used to quantify health and to analyze cost-effectiveness. These indices are based on interviewer- or self-administered questionnaires that address various health dimensions or domains, such as mobility, ability to perform certain activities, emotional state, sensory function, cognition, social function, and freedom from pain. Six such indices, several of which are proprietary, are used in the United States: the EuroQol EQ-5D; the Health Utilities Index Mark 2 and Mark 3; the Quality of Well-Being Scale, self-administered form; the SF-6D; and the HALex (12). More detailed descriptions of these indices are available (9,12). The Centers for Disease Control and Prevention has also developed HRQL measures that are used in BRFSS and the National Health and Nutrition Examination Survey (NHANES); these measures were recently validated against the SF-36v2 (13,14).

Although not direct measures of health and well-being, the incidence or prevalence of specific diseases and rates for accessing and using health care are frequently used as surrogates for disability, loss of function, or lack of well-being. Ascertaining the incidence and prevalence of disease may be accomplished through the use of disease registries, health records, and population surveys.

## Summary measures of population health

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Summary measures of population health have been developed in the past 40 years as an alternative to or extension of the basic metrics described above. The purpose of these summary measures is to “combine information on mortality and nonfatal health outcomes to represent the health of a particular population as a single numerical index” (15). These summary measures are based on reductions in life expectancy to account for disability or other measures of poor health; they provide estimates of either the expected number of future years of healthy life at a given age or the number of years that chronic disease and disability subtract from a healthy life.

In 1971, Sullivan described techniques for calculating 2 summary health indices — life expectancy free of disability and disability expectancy — by combining mortality rates from period life tables and survey-based disability rates (16). Subsequent work has produced other summary population health measures, including health-adjusted life expectancy, quality-adjusted life expectancy, years of healthy life, healthy life years (also known as disability-free life expectancy), disability-adjusted life years, and quality-adjusted life years. These measures vary by whether they use the actual or an idealized life expectancy for the population; whether they value all years of life and disability equally or discount certain years, such as childhood and old age; whether they are expressed as an adjusted life expectancy or as a sum of the years of disability for the entire population; and how they estimate the population’s health, prevalence of chronic disease, or prevalence of disability. Estimates of population health and disability are typically derived from either expert judgment in conjunction with published literature or survey data — both population and convenience samples have been used — on function, self-perceived health, and psychological or sensory distress. Along with continuing debate about methodologic issues, ethical concerns about the use of summary measures and the way in which they value life have been raised (15,17,18). Several excellent reviews on summary measures of population health and these issues are available (9,15,17,18).

## Measures of the distribution of health in a population

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Measures of the distribution of health in and among populations are as relevant as measures of the level of health in and among populations (15). Understanding the distribution of health can focus attention and action on specific health determinants and population groups to reduce inequalities in health and improve the overall level of health. Although the distribution of health outcomes could be assessed on any measurable geographic, demographic, social, or economic characteristic, some researchers argue that health inequalities should be assessed by using specific social and economic characteristics that have historically determined social status (for example, wealth, ethnicity, sex, educational attainment) (19). Others suggest that this viewpoint excludes potentially relevant determinants of health (20). Metrics to assess the distribution of outcomes include measures of inequality (Gini index), measures of association

(rate ratio), measures of impact (population-attributable proportion), and measures based on ranking (concentration index) (21,22).

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## Attributes of a Good Health Outcome Metric

Several groups have proposed criteria for assessing and selecting specific health indicators ([Table 1](#)). Their criteria include the need for the indicators to 1) further the goals of their organization, 2) be valid and reliable, 3) be easily understood by people who use them, 4) be measurable over time, 5) be measurable for specific geographically or demographically defined populations, 6) be measurable with available data sources, and 7) be sensitive to changes in factors that influence them, such as socioeconomic or environmental conditions or public policies (23-25).

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## Current Metrics for Population Health Outcomes

In 2008, Wold reviewed 35 sets of health indicators in use (26). Although not an exhaustive list, these 35 sets provide a representative view of health indicators and their intended uses, which include presenting a picture of the health of a place, stimulating action to improve health, and tracking progress toward meeting objectives ([Table 2](#)). No set of indicators is explicitly used as a guide to financially reward improvement in health outcomes.

Wold grouped the indicator sets into 4 overall categories: general health (14 sets), quality of life (5 sets), health systems performance (11 sets), and "other" (5 sets). She further divided the general health category into national (7 sets) and state and local (7 sets). These 35 indicator sets contain various health measures, only a few of which are outcome measures. Frequently used outcome indicators are infant mortality rate, condition-specific mortality rate, age-adjusted mortality rate, years of potential life lost, life expectancy at birth, leading causes of death, and percentage of adults who report fair or poor health.

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## Data and Analytical Issues for Population Health Outcome Metrics

### Available data sources

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The principal sources of data available for US population health outcomes are mortality data derived from death certificates and data on subjective health status, functional status, and experiential state derived from population health surveys. The National Vital Statistics System (NVSS) collects and compiles data on births and deaths from all registration districts (most commonly states) in the United States. The most commonly used surveys are NHIS, BRFSS, NHANES, and the National Survey on Drug Use and Health (NSDUH). Several states conduct city- or county-level risk factor surveys by using BRFSS methods and questions, and an increasing number of cities and counties now conduct their own surveys based on or derived from BRFSS. A few states and local areas (Wisconsin and New York City, for example) conduct surveys based on NHIS or NHANES methods to provide state or local estimates of health outcomes and determinants.

### Geographic units of analysis

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Mortality data are available for states and counties. Some states geocode their vital statistics data and provide data — usually through a Web-based data query and mapping tool — for zip codes, census tracts, or locally defined areas. BRFSS provides state-level estimates and estimates for selected metropolitan

statistical areas with 500 or more respondents. Several states, including Florida, North Dakota, Washington, and Wisconsin, conduct their own county-level BRFSS to produce estimates for at least some of their counties. NSDUH provides national and state estimates. NHIS and NHANES only provide national estimates.

## Validity and precision of the measures

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The validity and precision of mortality data — at least the number of people who die in a given time period in a given place — are high, as death registration is virtually complete in the United States. Condition-specific mortality data may be less valid because of errors in determining and coding the cause of death.

The designs of NHIS and NHANES to ensure that their samples are representative of their target populations and their high response rates (75%-90%) are indicators of high validity. Precision of estimates is related to sample size and the amount of variation of the characteristic being estimated in the target population. The size of the NHIS sample is sufficient to provide national estimates for the total population with relative standard errors of 1% to 3%, although relative standard errors of estimates for small subgroups may be as high as 10% to 30%. To provide more precision, NHIS oversamples some population subgroups. Estimates may be obtained for most states by combining data collected in several years.

Response rates for BRFSS, a state-based telephone survey, are considerably lower than for NHIS and NHANES. For example, state response rates for the 2008 survey ranged from 20% (Connecticut) to 58% (Utah), and the median was 34% (35).

## Measuring trends

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NVSS, NHIS, BRFSS, and NSDUH provide data annually, and NHANES provides data every 2 years. National trends can be measured by using any of these data sources, state trends can be measured by using NVSS and BRFSS, and county trends can be measured by using NVSS.

Annual trends in crude and age-adjusted mortality rate and in life expectancy since the mid-1900s are available for the United States at the national, state, and county levels. See, for example, an analysis of trends in county-level mortality (36), life expectancy at birth by race and sex from 1900 through 2005 (37), and average annual age-adjusted mortality by race, Hispanic origin, and state for 1979 through 1981, 1989 through 1991, and 2003 through 2005 (37). Trend data on mortality are also available for selected causes of death (37).

Trends in HRQL, assessed by using CDC's HRQOL-4 measures derived from BRFSS, are available for the United States and for each state from 1993 through 2008, the most recent year for which BRFSS data are available (13). CDC is generating county-level estimates for the following 3 CDC HRQOL-4 measures for 2001 through 2007 for the MATCH (Mobilizing Action Toward Community Health) county rankings by using BRFSS data: percentage who report fair or poor health, physically unhealthy days in the past 30 days, and mentally unhealthy days in the past 30 days. Neither national-, state-, nor county-level population data are available for the other HRQL indices. Their use has typically been in the clinical or research setting for assessing medical or surgical therapies. The Health Utilities Index has been used in Canada for 4 major population health surveys. Although many studies document the validity of various HRQL indices, fewer studies document their reliability or responsiveness to change over time.

## Measuring inequalities in health

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Several characteristics are available from NVSS and each of the surveys for measuring the dependence of population health on social and economic factors (Table 3). All systems provide these 5 characteristics for analysis: age, education level, ethnicity, race, and sex. Because of the limited availability of data for smaller geographic units, none of the systems can measure inequalities in health at the county level, except NVSS.



## Recommendations

“No single measure can capture the health of the nation” (24). On the basis of this review of existing health outcome metrics and data available for counties, I recommend the following metrics for population health outcomes at the county level.

### Life expectancy from birth or age-adjusted mortality rate

This metric mirrors a relevant outcome, data are readily available to assess temporal trends and geographic and demographic variation, and mortality is amenable to population health interventions, although changes in the mortality metric may take years to appear. Life expectancy has the advantage of being more easily communicated to, and understood by, the public than mortality rates.

### Condition-specific changes in life expectancy or condition- or age-specific mortality rate

This metric has the advantages of the overall mortality metric, as above, and allows public health programs to monitor the effect of specific interventions on more specific outcomes. An example might be monitoring increases in life expectancy or reductions in motor vehicle injury-related mortality resulting from efforts to modify driver behavior and to make roads and vehicles safer.

The conditions should be selected on the basis of local needs assessments (for example, conditions that dramatically affect mortality that could be addressed by local population health programs or other interventions). Alternatively, if states or counties needed to be compared directly, a fixed set of conditions could be selected, similar to conditions that the Institute of Medicine recommended for the State of the USA indicators (infant mortality and injury-related mortality).

### Self-perceived level of health, functional status, or experiential state

This metric reflects the population’s state of health and functional level and might provide a more immediate measure of the effect of interventions than the mortality metrics. Age-, sex-, and race-specific versions of the metric could provide at least some population specificity, which might be useful in monitoring the effect of interventions.

Although many of the HRQL instruments already in general use would work well for this metric, most of the instruments are proprietary, and state- and county-level data are not available from any of them. CDC’s HRQOL-4 is probably the most viable option for this measure, as it is not proprietary and state-level data have been available since 1993. By using moving averages or other methods of aggregating data, county-level trend estimates could be developed even for small counties. Although data from CDC’s HRQOL-4 are readily available, a more robust measure of HRQL, with specific questions about activity limitation, functional status, and experiential state, should be explored and adopted in the future (38). The CDC HRQOL-14, other HRQL indices described above, and work by Statistics Canada and REVES (Réseau Espérance de Vie en Santé, [http://reves.site.ined.fr/en/home/about\\_reves](http://reves.site.ined.fr/en/home/about_reves)) should be considered for this role.

### Distribution of population health outcomes

Metrics that provide only the average level of health in a population may mask inequalities in the distribution of health, with policy and programmatic implications. Metrics that provide information on the distribution of health are another component of a complete picture of population health (1,15). Such metrics would measure the inequalities in health among different geographic, economic, and demographic populations.

One geographically based metric is the rate difference between the highest and lowest county life expectancies or age-adjusted mortality rates in a state. America's Health Rankings introduced a measure in 2008 on the variation in mortality among counties in each state (27). A demographically based metric might be the difference between the highest and lowest sex- and race-specific life expectancies or age-adjusted mortality rates in a state. An economically based metric might be the difference in life expectancies or age-adjusted mortality rates between the highest and lowest income deciles in a state.

## **An optional summary measure of population health**

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Summary measures of population health, which combine information on death and nonfatal health outcomes, have the advantage of simplicity and parsimony and may be easier to communicate to the public and track over time than the series of basic measures previously recommended. If a summary measure is desirable, the health-adjusted life expectancy and healthy life years are good choices because they are based on life expectancy and use a population-based measure of HRQL, rather than an expert judgment-based measure.

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## Tables

**Table 1. Criteria Used to Select Health-Related Indicators by 2 Institute Of Medicine Committees and Criteria Proposed to Select Global Health Indicators**



Criteria <sup>a</sup> for Selecting an Indicator	Leading Health Indicators (23)	State of the USA Indicators (24)	Global Health Indicators (25)
Indicator is well-defined.			X
Indicator is worthwhile or important.	X	X	
Indicator is valid and reliable.	X	X	X
Indicator can be understood by people who need to act.	X		X
Indicator galvanizes action.	X		X
Action can improve the indicator.	X		
Measuring the indicator over time reflects effect of action.	X		
Measuring the indicator is feasible.			X
Data for the indicator are available for various geographic levels (local, national) and population subgroups.	X	X	X
Indicator is sensitive to changes in other societal domains (socioeconomic or environmental conditions or public policies).		X	

<sup>a</sup> The criteria for selecting indicators were compiled from the 3 reports cited. An "X" indicates that a report proposed using this criterion for selecting indicators.

**Table 2. Stated Purposes of 9 Health Indicator Sets<sup>a</sup>**



Indicator Set	Purpose
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America's Health Rankings (27)	To stimulate action by people, communities, public health professionals, health industry employees, and public administration and health officials to improve the health of the population of the United States
Boston Indicators Project (28)	To democratize access to information, foster informed public discourse, track progress on shared civic goals, and report on change in 10 sectors
Community Health Status Indictors (29)	To provide an overview of key health indicators for local communities and to encourage dialogue about actions that can be taken to improve a community's health
Georgia Health Equity Initiative (30)	To look holistically at the major factors that influence differences in health status and their relationship to racial and ethnic characteristics
<i>Healthy People 2010</i> Leading Health Indicators (31)	To define health objectives for the United States and track progress toward meeting them
Institute of Medicine, State of the USA Health Indicators (24)	To help Americans become more informed and, therefore, active participants in focusing public debate on important issues . . . To provide the most reliable and objective facts about the state of the United States and to serve as a tool for Americans to track the progress made on a broad range of issues, such as education, health, and the environment
Los Angeles County, Key Indicators of Health (32)	To monitor key health conditions and to engage a broad community of stakeholders in health improvement work
Robert Wood Johnson Foundation Commission to Build a Healthier America (33)	To raise visibility of the many factors that influence health, examine innovative interventions that are making a difference at the local level and in the private sector, and identify specific, feasible steps to improve Americans' health
Wisconsin County Health Rankings (34)	To summarize the current health of the counties as well as the distribution of key factors that determine future health . . . To encourage all community stakeholders to work with health departments and health care providers . . . to improve Wisconsin's health

<sup>a</sup> Eight of these sets were selected from the 35 indicator sets identified and reviewed by Wold in 2008 (26) for the Institute of Medicine's State of the USA Committee. The ninth indicator set was developed by the Institute of Medicine's State of the USA Committee. The criteria used for selecting the indicator sets displayed in this table from the 36 candidate indicator sets were that the indicator set contained both health outcome indicators and a specific stated purpose.

**Table 3. Characteristics for Which Inequalities in Health Can Be Measured by Using 1 State Survey (BRFSS), Data from 2 National Surveys (NHIS, NSDUH), and NVSS Mortality Data**



Characteristic	BRFSS	NHIS	NSDUH	NVSS
Age	X	X	X	X
Citizenship		X		
Education level	X	X	X	X
Employment status	X	X	X	
Ethnicity	X	X	X	X

<b>Geographic region</b>			X	
<b>Income</b>	X	X		
<b>Insurance status</b>		X		
<b>Marital status</b>	X			X
<b>National origin</b>				X
<b>Place of birth</b>		X		
<b>Place of residence</b>	X		X	X
<b>Race</b>	X	X	X	X
<b>Sex</b>	X	X	X	X

Abbreviations: BRFSS, Behavioral Risk Factor Surveillance System; NHIS, National Health Interview Survey; NSDUH, National Survey on Drug Use and Health; NVSS, National Vital Statistics System.

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# What Are We Talking About When We Talk About Population Health?

David Kindig

April 6, 2015



The term **population health** is much more widely used now than in 2003 when Greg Stoddart and I proposed the following definition: *“the health outcomes of a group of individuals, including the distribution of such outcomes within the group.”* The term is often seen in policy discussion, research, and in the name of new academic departments and institutes.

The term’s growing use, most notably in the **Triple Aim** and in clinical settings, has resulted in a conflicting understanding of the term today. In this post, I discuss the evolution of the term population health, and argue that going forward multiple definitions are needed. While the traditional population health definition can be reserved for geographic populations, new terms such as *population health management* or *population medicine* are useful to describe activities limited to clinical populations and a narrower set of health outcome determinants.

[Origins Of Population Health Terminology](#)

The most influential contemporary contribution to how we understand population health is *Why Are Some People Healthy and Others Not? The Determinants of Health of Populations*, a 1994 book by Evans, Barer, and Marmor. No definition of the term appears there, although the concept is described as, “the common focus on trying to understand the determinants of health of populations.”

In my 1997 book, *Purchasing Population Health: Paying for Results*, I proposed the definition as, “the aggregate health outcome of health-adjusted life expectancy (quantity and quality) of a group of individuals, in an economic framework that balances the relative marginal returns from the multiple determinants of health.” This definition included the specific measure of population health (health-adjusted life expectancy) as well as consideration of the relative cost-effectiveness of resource allocation to multiple determinants.

This definition emphasized that there are investment tradeoffs, which required “an economic framework that balances the relative marginal returns from the multiple determinants of health.” While less appreciated as a hallmark of population health thinking, the economic tradeoffs are equally important. If resources were unlimited we wouldn’t have to make investment choices, but they are limited. A critical component of population health policy has to be how the most health return can be produced from the next dollar invested, such as expanding insurance coverage or reducing smoking rates or increasing early childhood education. This is important for clinical populations as emphasized by the Triple Aim, but also for geographic populations needing resources from both public and private sectors.

In our 2003 article, Stoddart and I simplified the definition to focus on general health outcomes. We were thinking broadly about groups of individuals and suggested that “these populations are often geographic regions, such as nations or communities, but they can also be other groups, such as employees, ethnic groups, disabled persons, or prisoners.” At the time, the term typically referred to local geographic populations and had not yet been applied to the realm of medical care.

### **Multiple Determinants And Investment Tradeoffs**

By 2003, Stoddart and I believed that the increasing emphasis on social determinants had led to an under-emphasis on specific measures of health. In response, we developed our shortened, simplified definition without the earlier emphasis on the multiple determinants of health and economic tradeoffs among them.

Some may argue that multiple determinants are so fundamental to population health that they deserve definitional status. I believe, however, that including multiple determinants in the definition could lead to confusion between the outcome goal and the determinants needed to achieve that outcome. This point is so important that the County Health Rankings grade the health of America’s counties on two components: reported outcomes (such as low birthweight), and factors determining that outcome (in the case of low birthweight, access to care and child poverty rates).



## Health Disparities

The second phrase in the 2003 definition, “*including the distribution of such outcomes within the group*” deserves serious attention. We often state that our national and local goals are improving overall health *and* reducing disparities. Unfortunately in measurement, policy, and research, we often emphasize the average or overall, such as setting future life expectancy targets, but without such attention and specificity to the disparity reduction component.

A common assumption is that improving overall population health also reduces gaps by race, socioeconomic status (SES), and geography, but this is not always the case. Many times these goals compete with each other, such as quicker take up in health behaviors by more educated persons actually increasing disparities. Often policy tradeoffs are required. If we truly believe that reducing disparities by race and SES is just as important as improving overall health, we need to give them equal attention, as we did in the original 2003 definition.

## The Triple Aim And Population Health Management

The past six years have seen the prominent development of the Triple Aim, which proposes three linked goals — improving the individual experience of care, reducing per capita cost of care, and improving the health of populations. This framework provided a boost in the use of the term *population health*.

In particular, its promotion by the Institute for Healthcare Improvement and the Centers for Medicare and Medicaid Services has led many health care organizations to use it to describe the clinical (often chronic disease) outcomes of enrolled patients. And many clinicians and medical managers have begun to use the terms *population health management* or *population medicine*. For example, the **Symphonycare** website defines *population health management* as “the iterative process of strategically and proactively managing clinical and financial opportunities to improve health outcomes and patient engagement, while also reducing costs.”

## Do We Now Need Two Definitions Of Population Health?

I believe the answer is yes. Some have argued that the term should be reserved strictly for referring to geographic populations. But given how widely the term is now used in clinical settings, that is not realistic.

That is not ideal, because I believe that defining *population health* in terms of clinical populations draws attention away from the critical role that non-clinical factors such as education and economic development play in producing health. For this reason, I believe that when referring to patient populations, we should use the term *population health management* or perhaps even better, *population medicine*.

The traditional *population health* definition can then be reserved for geographic populations, which are the concern of public health officials, community organizations, and business leaders. For this reason, **Jacobson and Teutsch** recommended to the National Quality Forum that “current use of the abbreviated phrase *population health* should be abandoned and replaced by the phrase *total population health*.”

This will avoid confusion as the clinical care system moves rather swiftly toward measuring the health of the subpopulations they serve. Geopolitical areas rather than simply geographic areas are recommended when measuring total population health since funding decisions and regulations are inherently political in nature.

I understand this argument, but prefer that the modifiers “management” or “medicine” be used for clinical populations. I agree with the decision of the **Institute of Medicine (IOM) Roundtable on Population Health Improvement**, which chose “to retain the shorter term population health while acknowledging that we use it in the spirit of the Jacobson-Teutsch critique.”

Improving such total population health requires partners across many sectors—including public health, health care organizations, community organizations, and businesses—to integrate investments and policies across all **determinants**.

Many progressive health care organizations are doing cutting edge *population health management*, but are also working with other partners on *total population health* across geographic populations, such as the approach Health Partners board has taken in the Twin Cities. In such cases, it would be appropriate to label these efforts as *population medicine expanding into total population health*.

Semantics like this can seem arcane, but they also ensure that we clearly understand each other. For the next decade we need to be clear about these two ways of thinking about population health, how they interact, and the important work going on in both of them.

# Quality Measures and Impact



## Types of measures

**Structure:** the capacity, systems, and processes to promote and/or provide high-quality care.

**Process:** the effectiveness and capability of process(es). These measures may include output and quality control measures.

**Outcome:** reflect the impact of the health care service or intervention on the health status of patients. These include population health measures

NCHC has high degree of impact and accountability

NCHC can influence and impact through the collaborative care model and collective impact initiatives

# Types of Quality Measures

Measures used to assess and compare the quality of health care organizations are classified as either a structure, process, or outcome measure. Known as the Donabedian model, this classification system was named after the physician and researcher who formulated it.

## Structural Measures

Structural measures give consumers a sense of a health care provider's capacity, systems, and processes to provide high-quality care. For example:

- Whether the health care organization uses electronic medical records or medication order entry systems.
- The number or proportion of board-certified physicians.
- The ratio of providers to patients.

## Process Measures

Process measures indicate what a provider does to maintain or improve health, either for healthy people or for those diagnosed with a health care condition. These measures typically reflect generally accepted recommendations for clinical practice. For example:

- The percentage of people receiving preventive services (such as mammograms or immunizations).
- The percentage of people with diabetes who had their blood sugar tested and controlled.

Process measures can inform consumers about medical care they may expect to receive for a given condition or disease, and can contribute toward improving health outcomes. The majority of health care quality measures used for public reporting are process measures.

## Outcome Measures

Outcome measures reflect the impact of the health care service or intervention on the health status of patients. For example:

- The percentage of patients who died as a result of surgery (surgical mortality rates).
- The rate of surgical complications or hospital-acquired infections.

Outcome measures may seem to represent the “gold standard” in measuring quality, but an outcome is the result of numerous factors, many beyond providers' control. Risk-adjustment methods—mathematical models that correct for differing characteristics within a population, such as patient health status—can help account for these factors. However, the science of risk adjustment is still evolving. Experts acknowledge that better risk-adjustment methods are needed to minimize the reporting of misleading or even inaccurate information about health care quality.