# APPENDIX

## Appendix Table A1: Highly Successful Patient Satisfaction Outcomes for Programs Treating High Cost High Needs People (N=3)

| **Study, Year** | **Patient Satisfaction Outcomes** | **Reported Outcome at End of Follow-Up** | **Statistical Measure of Effect** | **Test of Significance** |
| --- | --- | --- | --- | --- |
| **Control** | **Intervention Group** |
| Friedman, 2009a | Patient improved health (mean scale) | 3.45 | 3.61 | t=2.24 | p< .05 |
|  | Patient satisfaction with nurse tool (mean scale) | 3.38 | 3.6 | t=2.26 | p< .05 |
|  | Patient satisfaction with nurse relationship (mean scale) | 4.21 | 4.35 | t=2.73 | p< .05 |
|  | Patient satisfaction with primary care provider/health provider (mean scale) | 3.35 | 3.56 | t=2.32 | p< .05 |
|  | Patient general satisfaction with nurse intervention (mean scale) | 3.72 | 4.0 | t=3.9 | p< .05 |
|  | Patient satisfaction with primary care partnership meeting (mean scale) | 3.35 | 3.73 | t=3.24 | p<.01 |
|  | Caregiver satisfaction with primary care provider/health provider (mean scale) | 3.64 | 3.77 | t=1.87 | p<.1 |
|  | Caregiver satisfaction with nurse help to reduce caregiver stress (mean scale) | 2.64 | 2.85 | t=2.17 | p< .05 |
| Gellis, 2012b | SF-36 subscale general health(mean) | 41.5 | 48.4 | F=3.91 | p< .016 |
|  | SF-36 subscale social functioning(mean) | 46.4 | 56.3 | F=3.64 | p< .014 |
| Luptak, 2010 | Overall positive response to device (%) |  | 79.3 |  | NR |
|  | Did not have difficulty with device (%) |  | 94.6 |  | NR |
|  | Likely to very likely to continue to use device (%) |  | 78.5 |  | NR |
|  | Satisfied to very satisfied with device (%) |  | 86 |  | NR |
|  | Easy to very easy to use device (%)  |  | 96.8 |  | NR |
|  | Improved communication between themselves and primary health care provider (%) |  | 49.5 |  | NR |
| aNo control group in this study. Values under “Control” represent 10 month follow-up and those under “Intervention” represent 20 month follow-upb A difference between control and intervention groups was not found. Values under “Control” represent baseline data for the intervention and values under “Intervention: represent 3 month follow-up outcomes.NR= not reported; NA=not applicable; SF-36= Medical Outcomes Study of Health Related Quality of Life; AOR= Adjusted odds ratio; CE=Coefficient estimatec Control represent baseline data for the intervention group and the intervention group represents outcomes at 12 months.  |

## Appendix Table A2: Highly Successful Clinical Outcomes for Programs Treating High Cost High Needs People (N=14)

| **Study, Year** | **Clinical Outcomes** | **Reported Outcome at End of Follow-Up** | **Intervention Group** | **Statistical Measure of Effect** | **Test of Significance** |
| --- | --- | --- | --- | --- | --- |
| **Control** | **Intervention Group** |
| Alexopoulous, 2011 | 12-item World Health Organization Disability Assessment Schedule II (WHODAS II) weeks 12 to 36 (disability during treatment) | NA | -2.14 |  | t=-2.46 | p=.01 |
| Blank, 2011 | Difference on the log of viral load at 12 months compared to baseline  | NA | -.361 |  | t=1.30 | p<.001 |
| Comart, 2013 | Depression (effect estimate difference per quarter of control vs. intervention group) | NA | -.11 |  |  | p=.031 |
|  | Delirium | NA | -.05 |  |  | p=.440 |
|  | Falls | NA | -.06 |  |  | p=.374 |
|  | Pains | NA | -.06 |  |  | p=.341 |
|  | Skin ulcers | NA | -.07 |  |  | p=.322 |
|  | Shortness of breath | NA | -.11 |  |  | p=.141 |
|  | Weight loss | NA | .03 |  |  | p=.720 |
|  | Number of medications | NA | -.09 |  |  | p=.213 |
|  | Physician orders | NA | -.16 |  |  | p=.130 |
|  | Hospitalizations  | NA | -.08 |  |  | p=.363 |
|  | ER visits | NA | -.92 |  |  | p<.001 |
|  | Composite of all outcomes | NA | -.27 |  |  | p<.001 |
| Gellis, 2012 | Depression Post-treatment(mean PHQ-9 score) | 15.2 | 14.9 |  |  | p<.008 |
|  | Depression Baseline(mean PHQ-9 score) | 13.6 | 7.4 |  |  |  |
|  | Hemoglobin A1c change from baseline at 3 months(mean) | -0.07 | -0.4b | -0.44c | F=3.47 | p=.03d |
|  | Hemoglobin A1c change from baseline at 12 months(mean) | -0.33 | -0.17b | -0.19c | F=.43 | p=.65d |
|  | Systolic blood pressure change from baseline to 12 months(mean scale) | 3.34 | 0.76b | -4.92c | F=3.84 | p=.02d |
| Gutgsell, 2013 | Pain(NRS mean score) Pre | 6.41 | 6.69 |  | NR | p<.0001 |
|  | Pain(NRS mean score) Post | 5.86 | 4.74 |  |  |  |
|  | Pain(FPS mean) | 2.3 | 2.38 |  | NR | p<.0001 |
|  | Pain(FPS mean) | 2.19 | 1.76 |  |  |  |
| Jerant, 2009 | Illness Management Self-efficacy Score at 6 weeks (mean)  | 7.2 | 7.6 | 7.2 | NR | p=.001 |
|  | Illness Management Self-efficacy Score at 6 months (mean) | 7.2 | 7.5 | 7.3 | NR | p=.04 |
|  | Illness Management Self-efficacy Score at 1 year(mean) | 7.2 | 7.4 | 7.2 | NR | NR |
|  | Physical component summary score (PCS-36) at 6 weeks (mean) | 37.3 | 34.9 | 36.3 | NR | NR |
|  | PCS-36 at 6 months (mean) | 37.2 | 36.2 | 37.5 | NR | NR |
|  | PCS-36 at 1 year (mean)  | 37.0 | 35.1 | 36.4 | NR | NR |
|  | Mental component summary score (MCS-36) at 6 weeks (mean) | 48.6 | 51.6 | 48.6 | NR | NR |
|  | MCS at 6 months (mean) | 48.0 | 49.6 | 48.0 | NR | NR |
|  | MCS at 1 year (mean)  | 48.5 | 51.2 | 48.5 | NR | NR |
| Kuo, 2013 | Functional Status RII (Child Functioning Scale  | 76.2c | 76.6c |  |  | p=.76 |
|  | Impact on family: Social | 23.2 c | 26.0c |  |  | p=.06 |
|  | Impact on family: Personal  | 14.6c | 14.7c |  |  | p=.84 |
|  | Parent Support Scale | 3.6c | 4.4c |  |  | p=.13 |
|  | SF-12 Health-Related Quality of Life, physical subscale | 49.1c | 46.4c |  |  | p<.01 |
|  | SF-12 Health-Related Quality of Life, mental subscale | 45.4c | 45.5c |  |  | p=.92 |
| Kiosses, 2011a | Depression(change in HDRS-24 score at 12 weeks)- Mr. X | NA | -14 |  | NA | NA |
|  | Depression(change in HDRS-24 score at 12 weeks)- Mrs. Y | NA | -10 |  | NA | NA |
|  | Disability(change in SDS score at 12 weeks)- Mr. X | NA | -4 |  | NA | NA |
|  | Disability(change in SDS score at 12 weeks)- Mrs. Y | NA | -8 |  | NA | NA |
| Li, 2012 | ADL shopping preparation(mean subscale) | AOR=.33 | p=.02 |
|  | ADL meal preparation(mean subscale) | AOR=.55 | p=.08 |
| Moggi, 2010 | Abstinence from drugs and alcohol (% yes) | 42.4d | 34.8 d |  | F=.84 | NR |
|  | Substance use problems (mean) | 8.1d | 15.2d |  | F=5.05 | p<.05 |
|  | Emotional distress (mean) | 7.9d | 17.6d |  | F=19.88 | p<.01 |
|  | Psychotic symptoms (mean) | 5.8d | 11.5d |  | F=11.29 | p<.01 |
| Ornstein,2013b | Pain(% symptom free) | 25 | 27.08 |  | NR | p<.05 |
|  | Depression(% symptom free) | 57.58 | 50 |  | NR | p<.05 |
|  | Anxiety(% symptom free) | 58.6 | 59.3 |  |  | p<.05 |
|  | Tiredness(% symptom free) | 45.1 | 47.5 |  |  | p<.05 |
| Petry, 2012 | Duration of drug abstinence(weeks) | 2.6 | 5 |  | F=4.22 | p=.04 |
|  | Unexcused abstinences | 8.1 | 4.3 |  |  | p<.002 |
| Wakefield, 2011 | Hemoglobin A1c change from baseline at 6 months(mean) | -0.07 | -0.4e | -0.44 | F=3.47 | p=.03 |
|  | Hemoglobin A1c change from baseline at 12 months(mean) | -0.33 | -0.17e | -0.19 | F=.43 | p=.65 |
|  | Systolic blood pressure change from baseline to 12 months(mean scale) | 3.34 | 0.76e | -4.92 | F=3.84 | p=.02 |
| Wakefield, 2012 | Self-efficacy scores from baseline at 6 months  | 8.1 | 8.1 | 7.7 |  | p=.09 |
|  | Self-efficacy scores from baseline at 12 months  | 8.3 | 8.3 | 7.8 |  | p=.19 |
|  | Medication-taking adherence from baseline at 6 months  | 99.6 | 99.8 | 99.6 |  | p=.79 |
|  | Medication-taking adherence from baseline at 12 months | 98.9 | 99.7 | 100 f |  | p=.20 |
| aArticle reported intervention effects on 2 patients. Statistical tests not appropriate.bNo control group in this study. Values under “Control” represent 10 month follow-up and those under “Intervention” represent 20 month follow-upNR= not reported; NA=not applicable; PHQ-9= Patient Health Questionnaire- 9 items; ADL= Activities of Daily Living; IADL= Instrumental Activities of Daily Living; NRS= Numeric Ration System; FACLS= Face, Legs, Activity, Cry, Consolability Scale; HDRS= Hamilton Depression Rating Scale-24 items; SF-12= Short Form-12 items; SDS= Sheehan Disability Scale; AOR= Adjusted odds ratio; CE=Coefficient estimatec Control represent baseline data for the intervention group and the intervention group represents outcomes at 12 months.d Control represent patients in Switzerland and intervention group represents patients in the U.S.  |

## Appendix Table A3: Highly Successful Health Care Utilization Outcomes for Programs Treating High Cost High Needs People (N=13)

| **Study, Year** | **Health Care Utilization Outcomes with High Success** | **Reported Outcome at End of Follow-Up** | **Statistical Measure of Effect** | **Test of Significance** |
| --- | --- | --- | --- | --- |
| **Control** | **Intervention Group** |
| Barett, 2010a | ED visits | 185 | 34 | NR | <.001 |
|  | all-cause hospitalization | 208 | 53 | NR | <.001 |
| Boult, 2011 | Home health care episodes (mean annual per capita use)  | 1.30 | .99 | AOR= .70 | CI= (.53-.93) |
|  | Hospital admissions  | .72 | .70 | AOR= 1.01 | CI= (.83-1.23) |
|  | 30-Day readmissions  | .17 | .13 | AOR=.79 | CI= (.53-1.16) |
|  | Hospital days  | 4.49 | 4.26 | AOR=1.00 | CI= (.77-1.30) |
|  | Skilled nursing facility admissions  | .25 | .20 | AOR=.92 | CI= (.60-1.40) |
|  | Skilled nursing facility days  | 4.03 | 2.84 | AOR=.84 | CI= (.48-1.47) |
|  | Emergency department visits  | .44 | .44 | AOR=1.04 | CI= (.81-1.34) |
|  | Primary Care visits  | 9.88 | 9.89 | AOR=1.02 | CI= (.91-1.14) |
|  | Specialist visits  | 8.49 | 9.04 | AOR=1.07 | CI= (.93-1.23) |
| Casey, 2011a | Overall cost to Medicaid(mean, $) | 4703 | 3524 | NR | p=0.001 |
|  | LOS | 1.25 | 2.25 | NR | p=0.001 |
|  | LOS per hospitalization | 14.5 | 10 | NR | p=0.01 |
| Comart, 2013 | Hospitalizations  | NA | -.08 |  | p=.363 |
|  | ER visits | NA | -.92 |  | p<.001 |
| De Jonge, 2014 | Hospitalizations (% reduction) | NA | 9 |  | p=.001 |
|  | ED visits (% reduction) | NA | 10 |  | p=.001 |
|  | Specialist visits (% reduction) | NA | 23 |  | p=.001 |
|  | Generalist visits (% gain) | NA | 105 |  | p<.001 |
|  | Total Medicare Costs ($) | 50,978 | 44,455 |  | p=0.1 |
| Edelman,2010 | ED visit(mean visits/ pt-yr) | 1.3 | 0.9 | NR | p<.001 |
|  | Primary care visits(mean vistis/ pt-yr) | 6.2 | 5.3 | NR | p=.01 |
| Edes, 2014  | Medicare hospital days  | 4,511 | 4,161 |  | p<.001 |
|  | Medicare skilled nursing facility days | 5,559 | 5,594 |  | p=.68 |
|  | Total Medicare cost per patient, $ (6 months)  | 4,025 | 3,590 |  | p<.001 |
|  | VA hospital days  | 8,877 | 4,339 |  | p<.001 |
|  | Total VA costs per patient, $ (6 months) | 19,234 | 13,822 |  | p<.001 |
|  | VA and Medicare hospital admissions per 100 patients-months | 15.7 | 11.7 |  | p<.001 |
|  | VA and Medicare hospital days  | 13,388 | 8,500 |  | p<.001 |
| Kuo, 2011 | Need Help with care coordination (%) | 78.3 c | 31.3 c |  | p<.001 |
|  | Child has a written care plan (%) | 52.9 c | 84.9 c |  | p<.001 |
|  | Receive info about family support (%) | 45.7 c | 55.3 c |  | p=.14 |
|  | Receive info about current research (%) | 37.5 c | 33.7 c |  | p=.52 |
|  | Care team helps with understanding child’s emotional needs (%) | 54.8 c | 49.4 c |  | p=.46 |
|  | Care team shows concern about impact of health on family (%) | 62.7 c | 62.7 c |  | p=1 |
|  | No shows | NA | NR | NR | p<.01 |
| Moggi, 2010 | Remission (% yes) | 14.1 d | 22.7 d | F=1.49 | NR |
|  | Hospitalization (% yes)  | 20.6 d | 39.4 d | F=6.83 | p<.01 |
| North, 2008 | Direct Cost Savings ($) | NA | NR |  | p<.01b |
|  | ED visits | NA | NR | NR | p<.01 |
| O'Toole, 2009 | All-cause hospitalization (mean admission/ person) | 0.47 | 0.15 |  | p=.02 |
|  | Non-emergent ED visits | 38.6 | 18.5 |  | p<.01 |
|  | ER visits(summary score) | CE=0.521 | p<.01 |
| Ouslander, 2009  | Preventable hospitalizations (% reduction) | 77 | 49 | NR | NR |
| Takahashi, 2013 | Inpatient hospitalization (%) | 10.5 | 0.0 |  | p=0.17 |
|  | ER visits (%) | 31.6 | 11.8 |  | p=0.37 |
| a High success is defined as greater than 1 statistically significant patient satisfaction outcome.b P-value compares mean absolute reduction across all groups. c low continuity intervention d moderate continuity intervention e high continuity intervention f compares low continuity to high g compares moderate continuity to high h No control group in this study. Values under “Control” represent baseline assessment and those under “Intervention” represent post-intervention follow-up I P-values compare overall pre post intervention assessment  I compares intervention to long term care facilityCI= confidence interval; Pt= patient; Yr= year; ED= emergency Department; LOS= Length of Stay; AOR= Adjusted odds ratio; CE=Coefficient estimatec Control represent baseline data for the intervention group and the intervention group represents outcomes at 12 months.d Control represent patients in Switzerland and intervention group represents patients in the U.S. |