December 2016

Interventions to Promote Health and Increase Health Care Efficiency:
December 2016 Update

The Washington State Legislature directed the Washington State Institute for Public Policy (WSIPP) to "calculate the return on investment to taxpayers from evidence-based prevention and intervention programs and policies."[1] In 2015, WSIPP's Board of Directors authorized WSIPP to work on a joint project with the MacArthur Foundation and the Pew Charitable Trusts, with additional support from the Robert Wood Johnson Foundation, to extend WSIPP's benefit-cost analysis to certain health care topics.

In this report, we present new meta-analytic findings for a variety of interventions to promote health and increase health care efficiency.

In Section I we describe our research approach. In Section II we discuss new findings for programs in four health care areas:[2]

1) Programs to promote healthy pregnancy and birth (pages 4-11);

2) Therapies to treat opioid use disorder (pages 12-17);

3) Integration of behavioral health and primary care (pages 17-22); and

4) Patient-centered medical homes (pages 23-25).

In this report, we describe whether the programs achieve effects on outcomes, and, if so, the magnitudes of those effects. In 2017, WSIPP will present benefit-cost results for these programs.

---

[1] Engrossed Substitute House Bill 1244, Chapter 564, Laws of 2009.
[2] Please see our website for findings on other health care topics: http://www.wsipp.wa.gov/BenefitCost?topicId=6.

Summary

WSIPP's Board of Directors authorized WSIPP to work on a joint project with the MacArthur Foundation and the Pew Charitable Trusts, with additional support from the Robert Wood Johnson Foundation, to extend WSIPP's benefit-cost analysis to certain health care topics.

We present new meta-analytic findings for programs in four health care areas: 1) the promotion of healthy pregnancy and birth; 2) therapies to treat opioid use disorder; 3) the integration of behavioral health and primary care, and 4) patient-centered medical homes.

For each topic, we gathered all credible evaluations we could locate. We screened the studies for methodological rigor and computed an average effect of the programs on specific outcomes. The Center for Evidence-based Policy (CEbP) at Oregon Health & Science University collaborated in this research by conducting comprehensive search strategies to identify eligible studies for several topics, assessing the quality of evidence, performing data abstraction, and reviewing meta-analytic results.

We find evidence that some approaches achieve desired outcomes but others do not. We explain these results in this report and display them in summary tables (see Exhibits 2-5).

At this stage of the project, we do not compute benefits and costs for these findings. Rather, we describe whether the programs achieve effects on outcomes, and, if so, the magnitudes of those effects. In 2017, WSIPP will present benefit-cost results for these programs.

I. Research Methods

When WSIPP carries out studies to identify what works in public policy, we implement a set of standardized procedures. We search for all studies on a given topic. Our empirical approach follows a meta-analytic framework to assess systematically all credible evaluations we can locate. Only studies with weak research methods are excluded from our analysis, allowing us to confidently estimate causal impacts of a treatment.

Given the weight of the research evidence, we calculate an average effect ("effect size") of a policy or treatment on a particular outcome of interest. An effect size measures the degree to which a program has been shown to change an outcome (such as smoking during pregnancy) for program participants relative to a comparison group. We describe our methods in detail in WSIPP's Technical Documentation.[3]

The Center for Evidence-based Policy (CEbP) at Oregon Health & Science University collaborated in this research by conducting comprehensive search strategies to identify eligible studies for several topics, assessing the quality of evidence, performing data abstraction, and reviewing meta-analytic results.

II. Summary of New Findings

This section presents new findings for four broad areas:

1) Programs to promote healthy pregnancy and birth;
2) Therapies to treat opioid use disorder;
3) Integration of behavioral health and primary care; and
4) Patient-centered medical homes.

Average effect sizes are displayed in Exhibits 2-5. The studies used in our analysis are listed in Appendix II.

There are not sufficient rigorous studies to produce meta-analytic results on key outcomes for some topics reviewed in collaboration with the CEbP. These topics include medication-assisted therapy for opioids during pregnancy, long-acting reversible contraceptives, prenatal depression screening, Chronic Care Model (CCM) intervention, and collaborative primary care for posttraumatic stress disorder. Appendix I summarizes the research literature for each of these topics.

---

[3] Washington State Institute for Public Policy (2016). *Benefit-cost technical documentation.* Olympia, WA: Author. Retrieved from http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf.

Exhibit 1

Topics Analyzed

Topic area	Programs included
Programs to promote healthy pregnancy and birth	Smoking cessation during pregnancy, pages 6-8 • Intensive behavioral interventions • Contingency management • Nicotine replacement • Postpartum smoking relapse prevention Interventions to prevent excessive gestational weight gain, pages 8-9 • For the general population • For women with obesity-related risk factors Group prenatal care, page 9 Enhanced prenatal care programs, pages 9-11 • Delivered through Medicaid • Non-Medicaid programs for adolescents • Non-Medicaid programs for African-American women Prenatal home visiting programs, pages 11-12 • Delivered by professional providers • Delivered by paraprofessional providers
Therapies to treat opioid use disorder	Medication-assisted therapies, pages 14-16 • Methadone maintenance • Early initiation of methadone treatment • Buprenorphine maintenance • Early initiation of buprenorphine treatment • Buprenorphine taper for prescription opioid use disorder • Long-acting injectable medications Nonpharmacological therapies, page 17 • Cognitive-behavioral coping skills therapy • Contingency management
Integration of behavioral health and primary care	Collaborative primary care programs, pages 18-22 • For adults with anxiety • For adults with depression • For older adults with depression • For adults with depression and comorbid medical conditions • For older adults with depression and comorbid medical conditions Telemedicine for behavioral health in primary care, page 22 • PTSD in primary care • Depression in primary care
Patient-centered medical homes	Patient-centered medical homes (PCMH), pages 23-25 • For general patient populations • For high-risk patient populations

1) Programs to promote healthy pregnancy and birth

We examined interventions that aim to support healthy pregnancy and birth, including the following:

- Smoking cessation during pregnancy;

- Interventions to prevent excessive gestational weight gain;
- Group prenatal care;
- Enhanced prenatal care; and
- Prenatal home visiting programs.

Exhibit 2
Meta-Analytic Results: Programs to Promote Healthy Pregnancy and Birth

Topic and specific outcomes measured	No. of effect sizes	Average effect size	Standard error	p-value	Treatment N
Intensive behavioral interventions for smoking cessation during pregnancy					
Smoking during late pregnancy	16	-0.228	0.079	0.004	2,370
Postpartum smoking	6	-0.043	0.074	0.559	895
Low birthweight (<2,500 g)	3	-0.088	0.066	0.183	793
Contingency management for smoking cessation during pregnancy					
Smoking during late pregnancy	7	-0.751	0.110	0.000	516
Postpartum smoking	4	-0.498	0.121	0.000	422
Admission to NICU[1]	4	-0.339	0.213	0.112	151
Low birthweight (<2,500 g)	4	-0.494	0.217	0.023	151
Preterm birth (<37 weeks gestational age)	5	-0.340	0.130	0.009	457
Nicotine replacement treatment during pregnancy					
Smoking during pregnancy	5	-0.168	0.101	0.096	972
Birthweight (grams)	4	0.169	0.135	0.211	433
Gestational age at birth	4	0.113	0.158	0.473	433
Low birthweight (<2,500 g)	4	-0.134	0.196	0.494	830
Preterm birth (<37 weeks gestational age)	3	-0.138	0.125	0.269	638
Admission to NICU[1]	2	-0.073	0.135	0.592	612
Postpartum smoking relapse prevention					
Postpartum smoking	4	-0.359	0.117	0.002	405

Notes:
[1] Neonatal Intensive Care Unit (NICU).
[2] Excessive gestational weight gain as defined by the Institute of Medicine, a division of the congressionally chartered National Academy of Sciences.
[3] "Macrosomia" is a term used to describe a newborn that weighs more than 4,000 grams (8 pounds, 13 ounces) at birth—regardless of gestational age.

Exhibit 2 (Continued)

Meta-Analytic Results: Programs to Promote Healthy Pregnancy and Birth

Topic and specific outcomes measured	No. of effect sizes	Average effect size	Standard error	p-value	Treatment N
Interventions to prevent excessive gestational weight gain in the general population					
Excessive weight gain during pregnancy[2]	10	-0.184	0.052	0.000	1,172
Gestational diabetes	5	-0.256	0.120	0.032	621
Cesarean section	5	-0.081	0.102	0.425	1,054
Pre-eclampsia	3	-0.009	0.136	0.945	706
Maternal hypertension	2	-0.461	0.189	0.015	468
Low birthweight (<2,500 g)	4	0.025	0.070	0.722	719
Macrosomia[3]	7	-0.131	0.111	0.239	1,272
Preterm birth (<37 weeks gestational age)	6	0.070	0.066	0.288	1,247
Interventions to prevent excessive gestational weight gain among women with obesity-related risk factors					
Excessive weight gain during pregnancy[2]	10	-0.240	0.110	0.029	1,846
Gestational diabetes	13	-0.124	0.074	0.093	2,906
Cesarean section	8	-0.063	0.058	0.276	2,525
Pre-eclampsia	5	0.019	0.076	0.805	2,432
Maternal hypertension	6	-0.038	0.070	0.584	1,641
Low birthweight (<2,500 g)	3	0.252	0.209	0.230	1,101
Macrosomia[3]	7	-0.118	0.053	0.026	2,565
Preterm birth (<37 weeks gestational age)	4	-0.132	0.087	0.132	2,016
Admission to NICU[1]	3	-0.005	0.050	0.926	1,891
Group prenatal care					
Postpartum depression	2	0.000	0.057	1.000	785
Preterm birth (<37 weeks gestational age)	4	-0.054	0.072	0.453	1,989
Low birthweight (<2,500 g)	4	-0.084	0.070	0.230	1,523
Admission to NICU[1]	3	0.016	0.085	0.853	1,358
Small for gestational age	2	-0.176	0.080	0.028	1,196
Enhanced prenatal care programs delivered through Medicaid					
Preterm birth (<37 weeks gestational age)	3	-0.089	0.035	0.011	32,638
Low birthweight (<2,500 g)	5	-0.087	0.017	0.000	51,826
Small for gestational age	3	-0.037	0.032	0.251	25,588
Infant mortality	2	-0.088	0.049	0.075	35,194
Very low birthweight (<1,500 g)	2	-0.224	0.040	0.000	26,241
Admission to NICU[1]	1	-0.114	0.027	0.000	10,715
Non-Medicaid enhanced prenatal care programs for adolescents					
Preterm birth (<37 weeks gestational age)	2	-0.181	0.140	0.195	2,004
Low birthweight (<2,500 g)	4	-0.106	0.105	0.315	2,556

Notes:
[1] Neonatal Intensive Care Unit (NICU).
[2] Excessive gestational weight gain as defined by the Institute of Medicine, a division of the congressionally chartered National Academy of Sciences.
[3] "Macrosomia" is a term used to describe a newborn that weighs more than 4,000 grams (8 pounds, 13 ounces) at birth—regardless of gestational age.

Exhibit 2 (Continued)

Meta-Analytic Results: Programs to Promote Healthy Pregnancy and Birth

Topic and specific outcomes measured	No. of effect sizes	Average effect size	Standard error	p-value	Treatment N
Non-Medicaid enhanced prenatal care programs for African-American women					
Low birthweight (<2,500 g)	4	0.015	0.086	0.860	1,432
Prenatal home visiting programs delivered by professional providers					
Preterm birth (<37 weeks gestational age)	3	-0.054	0.036	0.138	17,077
Low birthweight (<2,500 g)	3	-0.058	0.025	0.020	17,077
Very low birthweight (<1,500 g)	2	-0.113	0.092	0.218	16,044
Infant mortality	2	-0.195	0.045	0.000	328
Prenatal home visiting programs delivered by paraprofessional providers					
Preterm birth (<37 weeks gestational age)	3	-0.084	0.044	0.054	2,040
Low birthweight (<2,500 g)	5	-0.069	0.047	0.137	2,720

Notes:
[1] Neonatal Intensive Care Unit (NICU).

[2] Excessive gestational weight gain as defined by the Institute of Medicine, a division of the congressionally chartered National Academy of Sciences.

[3] "Macrosomia" is a term used to describe a newborn that weighs more than 4,000 grams (8 pounds, 13 ounces) at birth—regardless of gestational age.

Smoking cessation during pregnancy

Smoking during pregnancy has been shown to increase the risks of low birthweight and preterm delivery and add to health care costs.[4]

We examined four programs that aim to reduce smoking during and after pregnancy:

- Intensive behavioral interventions that provide counseling;
- Contingency management interventions that reward quitting;
- Nicotine replacement therapy as an adjunct to counseling; and
- Relapse prevention programs.

[4] Adams E., Markowitz S., Dietz P., & Tong V. (2013). Expansion of Medicaid covered smoking cessation services: maternal smoking and birth outcomes. *Medicare & Medicaid Research Review, 3*(3), E1-E23 and Coleman T., Chamberlain C., Davey M.A., Cooper S.E., Leonardi-Bee J. (2012). Pharmacological interventions for promoting smoking cessation during pregnancy (Review). *Cochrane Database of Systematic Reviews*. Issue 9.

We reviewed, with assistance from the CEbP, 76 studies of smoking cessation programs and included 30 rigorous evaluations in our analysis.

Intensive behavioral interventions for smoking cessation during pregnancy. We reviewed the research literature on behavioral interventions that provide intensive face-to-face or phone counseling.[5] These programs are tailored to pregnant smokers, include more than a single brief counseling session, and offer self-help materials to encourage smoking cessation. Motivational interviewing is the most common type of counseling.

Our analysis included 17 evaluations of intensive behavioral interventions. We find that these programs, on average, reduce smoking during late pregnancy (see Exhibit 2). Across the studies, 23% of women in treatment groups quit smoking versus 15% in control groups. However, many women relapse after giving birth, and we do not find an effect on postpartum smoking.

We also did not find a reliable effect on low birthweight, and there was insufficient evidence among these studies regarding effects on preterm birth and neonatal intensive care unit (NICU) admissions.

Contingency management for smoking cessation during pregnancy. Contingency management is a supplement to counseling that rewards participants for attending treatment and/or abstaining from substance use. The interventions reviewed here recruited women who were smoking during pregnancy and provided rewards contingent on quitting and remaining abstinent. Rewards were in the form of vouchers exchangeable for goods. Participants typically received vouchers worth $400 to $600 dollars.

We find that contingency management, on average, reduces smoking during pregnancy, postpartum smoking, low birthweight, and preterm birth (see Exhibit 2). Across the six studies in our analysis, average quit rates during pregnancy are 29% in treatment groups versus 10% among controls.

Nicotine replacement treatment during pregnancy. We reviewed evaluations of programs where nicotine replacement (patches or gum) was provided in conjunction with behavioral counseling for smoking cessation during pregnancy. We find evidence that nicotine replacement therapy, as an adjunct to counseling, reduces smoking during pregnancy. Across the five studies included in our analysis, average quit rates were 12% in the treatment group versus 8% in the control groups.

We did not find reliable effects of nicotine replacement on preterm birth, low birthweight, or NICU admissions (see Exhibit 2).

Postpartum smoking relapse prevention. Among women who quit during pregnancy, about 40% resume smoking within six months after delivery.[6] We reviewed studies

---

[5] We excluded evaluations of programs that only included a single brief counseling session (< 15 minutes), that only provided self-help materials, and that did not use laboratory tests to confirm smoking status.

[6] Centers for Disease Control and Prevention (CDC) estimate based on 2011 Pregnancy Risk Assessment and Monitoring System (PRAMS) survey data; retrieved at http://www.cdc.gov/reproductivehealth/maternalinfanthealth/tobaccousepregnancy/.

of programs that recruited women who quit smoking during pregnancy and provided counseling to prevent relapse. These programs included at least some postpartum counseling.

We find that the programs help prevent postpartum smoking relapse. About 40% of women in the treatment groups continued to abstain from smoking after delivery versus 27% in the control groups.

Interventions to prevent excessive gestational weight gain

Research links excessive weight gain during pregnancy[7] to adverse and costly infant and maternal outcomes.[8] In 2011, over half of pregnant women in Washington were either overweight or obese prior to pregnancy.[9] These women are at particular risk for excessive gestational weight gain and related complications.[10]

We reviewed research on clinical programs that seek to prevent excessive gestational weight gain through nutrition and physical activity counseling, provision of educational resources, or supervised exercise programs. In the programs evaluated, athletic trainers led exercise programs in groups and counseling was delivered one-on-one in a clinical setting by a health educator, midwife, or obstetrician.[11]

We provide meta-analytic results for the following groups:

- The general population and
- Women with obesity-related risk factors.

Interventions for women in the general population. The programs reviewed reduce excessive gestational weight gain, on average (see Exhibit 2).[12] These interventions would reduce the percentage of women with excessive gestational weight gain from 47% to 39%.

We also find evidence for reductions in gestational diabetes and maternal hypertension, on average. We do not find effects on other adverse outcomes reported.

Interventions for women with obesity-related risk factors. We find that, on average, these interventions reduce the percentage of women with obesity-related risk factors who experience excessive gestational weight gain (see Exhibit 2).[13] We also find evidence of a reduction in newborns weighing greater than 4,000 grams at birth (macrosomia).

---

[7] The Institute of Medicine, a division of the congressionally chartered National Academy of Sciences, publishes recommendations for women's weight gain during pregnancy. Statewide Perinatal Advisory Committee, DSHS Division of Research and Data Analysis, DOH Office of Healthy Communities (2013). *Perinatal indicators report for Washington residents: 2011 data.* Olympia, WA: Washington State Dept. of Health. Retrieved from: http://www.doh.wa.gov/portals/1/Documents/Pubs/950-153_PerinatalIndicatorsforWashingtonResidents.pdf.

[8] Institute of Medicine (2009). *Weight gain during pregnancy: reexamining the guidelines*. Washington, DC: National Academies Press. Retrieved from: http://archive.wzzm13.com/pdf/PregnancyGuidelines_2009.pdf.

[9] Statewide Perinatal Advisory Committee, DSHS Division of Research and Data Analysis, DOH Office of Healthy Communities (2013).

[10] Washington State DSHS Division of Research and Data Analysis, DOH Office of Healthy Communities (2014). *Weight gain during pregnancy in Washington State*. Report 160-190. Retrieved from: http://here.doh.wa.gov/materials/weight-gain-during-pregnancy-in-washington-state/15_PregWtGest_E14L.pdf.

[11] Counseling ranged from one to nine sessions, per participant.

[12] We identified 43 studies and included 12 rigorous evaluations in our analysis.

[13] We reviewed 30 studies and included 13 rigorous evaluations in our analysis.

We find evidence that these programs reduce gestational diabetes, on average. We do not find effects on other adverse outcomes reported.

Group prenatal care

Prenatal care visits are traditionally conducted by an obstetrician or midwife in a clinical setting. Group prenatal care is an alternative strategy to deliver prenatal education, clinical assessments, and testing in a non-clinical setting, such as a community center. Groups are typically led by an obstetrician or midwife and may also include a registered nurse or medical assistant as a second staff member.

Five of the six included evaluations are studies of the CenteringPregnancy model of prenatal care, which includes education and clinical assessments in a group setting.[14] The sixth study examined prenatal education in groups of six to eight and taught pregnant adolescents to conduct routine clinical measurements on their peers.[15]

We find evidence that, on average, group prenatal care reduces the chances of giving birth to an infant that is small for gestational age[16] (see Exhibit 2). We do not find effects on other adverse outcomes reported.

Enhanced prenatal care

Enhanced prenatal care programs include at least two of the following services: risk assessment, case management, psychosocial support, health education, and/or nutritional counseling. These services are intended to be provided in addition to clinical prenatal care.[17] Enhanced prenatal care programs are tailored to meet the needs of women with high-risk pregnancies based on socioeconomic status, age, race, or other factors.

We provide meta-analytic results for the following enhanced prenatal care programs:[18]

- Programs delivered through Medicaid;
- Non-Medicaid programs for adolescents; and
- Non-Medicaid programs for African-American women.

Programs delivered through Medicaid. Since 1985, prenatal care coordination has been a part of the federal Medicaid program,[19] providing enhanced prenatal care services to low-income women. These women are at high risk for adverse birth outcomes.[20] As of 2010, 41% of nationwide births are insured

[14] We reviewed 27 studies and included six rigorous evaluations in our analysis.

[15] The "routine measures" included fetal heart tones, fundal height measurement, weights, and blood pressure measures. Ford, K., Weglicki, L., Kershaw, T., Schram, C., Hoyer, P.J., & Jacobson, M.L. (2002). Effects of a prenatal care intervention for adolescent mothers on birth weight, repeat pregnancy, and educational outcomes at one year postpartum. *The Journal of Perinatal Education, 11(*1), 35-38.

[16] "Small for gestational age" refers to infants with a birthweight below the 10th percentile for their gestational age.

[17] All women in treatment and comparison groups received clinical prenatal care (treatment as usual).

[18] We reviewed 63 studies and include 14 rigorous evaluations in our analysis. Prenatal home visiting programs are excluded from this topic and reported on separately.

[19] In 1985, the Omnibus Budget Act directed Health Care Financing to PNCC programs, as part of a larger effort to address disparate birth outcomes and infant mortality rates.

[20] Willems Van Dijk, J., Anderko, L., & Stetzer, F. (2011). The impact of prenatal care coordination on birth outcomes. *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 40*(1), 98-108. Anum, E.A., Retchin, S.M., & Strauss III, J.F. (2010). Medicaid and preterm birth and low birth weight: the last two decades. *Journal of Women's Health, 19*(3), 443-451.

by Medicaid.[21] Forty-two states, including Washington, provide maternity care coordination and support through Medicaid.

Programs delivered through Medicaid typically included risk assessment, case management, psychosocial support, and health education. Women are eligible for these programs at any time during their pregnancy and for the first 12 months postpartum. Participants typically received the program for 3-16 months, including both prenatal and postpartum services.

We find that, on average, these programs reduce low birthweight, very low birthweight, and preterm birth among program recipients, when compared to women who receive only treatment as usual (see Exhibit 2).[22] Given the average effect size for these programs, we would expect a reduction in low birthweight from 5.6% to 4.9% in a Medicaid population.

We also find evidence that, on average, these programs reduce infant mortality. We find no evidence of an effect on NICU admissions.

Non-Medicaid programs for adolescents. Pregnant adolescents[23] are particularly at risk for adverse maternal and child health outcomes, including inadequate prenatal

care,[24] low birthweight, and preterm birth.[25] Some non-Medicaid enhanced prenatal care programs focus on this population. These programs included intensive case management, group classes, or both, provided by either a paraprofessional or team of health service providers. These programs focused exclusively on the prenatal period, and did not include postpartum services. Participants could enroll at any time during their pregnancy, and typically received the program for four months.

We find that non-Medicaid programs for pregnant adolescents have no effect on reported birth outcomes, on average (see Exhibit 2).[26]

Non-Medicaid programs for African-American women. Non-Medicaid enhanced prenatal care programs for African-American women provide psychosocial support and health education regarding risk reduction. Some programs also include case management and nutritional counseling. Services are provided by paraprofessionals or nurses. Participants in the reviewed studies typically received the program for five months, including prenatal and postpartum services.[27]

[21] Roman, L.A., Meghea, C.I., Raffo, J.E., Biery, H.L., Chartkoff, S.B., Zhu, Q., . . . Summerfelt, W.T. (2010). Who participates in state sponsored Medicaid enhanced prenatal services? *Maternal and Child Health Journal*, *14*(1), 110-120.

[22] We identified six rigorous evaluations that examined enhanced prenatal care programs delivered through Medicaid. States represented by these evaluations include Alabama, California, North Carolina, Washington, and Wisconsin.

[23] Pregnant adolescents include pregnant women age 19 or under.

[24] Adequate prenatal care based on the Kotelchuck Index (also known as the Adequacy of Prenatal Care Utilization Index), which accounts for gestational age at initiation of prenatal care and frequency of prenatal care visits.

[25] Issel, L.M., Gilmet, K., Chihara, I., & Slaughter-Acey, J. (2015). Adolescent and Adult Clients in Prenatal Case Management: Differences in Problems and Interventions Used. *Maternal and Child Health Journal*, *19*(12), 2673-2681.

[26] We identified four rigorous evaluations that examined programs for adolescents.

[27] Three of the four included programs required enrollment before the 3rd trimester of pregnancy. The fourth program allowed enrollment at any time during the pregnancy.

We find that non-Medicaid enhanced prenatal care programs for African-American women have no effect on reported birth outcomes, on average (see Exhibit 2).[28]

Prenatal home visiting programs

Prenatal home visiting programs provide services to women, children, and families.[29] Prenatal home visiting includes one or more non-clinical services that support maternal wellness and infant health during the prenatal period, such as case management, health education, risk assessment, psychosocial support, or nutritional counseling.[30]

These programs are intended for women with high-risk pregnancies based on socioeconomic status, age, race, or other pregnancy risk factors. Women are eligible for these programs during their pregnancy, and some programs may continue for up to 36 months postpartum. Programs may be delivered by professional providers (nurses or social workers) or by paraprofessional providers.

We provide meta-analytic results for prenatal home visiting programs delivered by the following:[31]

- Professional providers and
- Paraprofessional providers.

Programs delivered by professional providers. On average, prenatal home visiting programs delivered by nurses or social workers reduce low birthweight, when compared to treatment as usual alone (see Exhibit 2).[32] This translates to an average reduction in low birthweight from 4.9% to 4.5%. We also find that, on average, these programs reduce infant mortality by 27.4%.

We find no evidence for an effect on preterm birth or very low birthweight.

Programs delivered by paraprofessional providers. Paraprofessionals have at least a high school education and are often members of the community served by the program. In included programs,[33] providers received an average of 150 hours of program-specific training and were supervised by a nurse or social worker.

We find evidence that these programs reduce preterm birth on average, when compared to treatment as usual alone (see Exhibit 2).[34] This translates to an average reduction in preterm birth from 8.2% to 7.2%. We find no evidence for an effect on low birthweight.

[28] We identified four rigorous evaluations that examined non-Medicaid programs for African-American women.
[29] WSIPP has produced benefit-cost analyses on home visiting programs with a focus on child welfare, with results available on WSIPP's website. These results can be viewed at: http://wsipp.wa.gov/BenefitCost?topicId=9
[30] All women in treatment and comparison groups received clinical prenatal care (treatment as usual).
[31] We reviewed 21 studies and identified nine rigorous evaluations for our analysis.

[32] We identified four rigorous evaluations of programs provided by nurses or social workers.
[33] Programs included in this analysis averaged 16 home visiting hours, 2.5 training hours, and one supervisory hour per participant. In three out of the four included programs, programs were focused on adolescent women.
[34] We identified five rigorous evaluations of programs provided by paraprofessionals.

2) Therapies to treat opioid use disorder

Opioid use, including both heroin and prescription pain relievers, has increased over the past 15 years, and overdoses have quadrupled.[35] About 30,000 Americans died from opioid overdoses in 2014, including 19,000 deaths related to prescription drugs and 10,600 to heroin.[36]

Comprehensive responses to opioid use disorder include prevention, treatment and harm reduction.[37] This report focuses on treatment, both medication-assisted therapies and counseling.

---

[35] Centers for Disease Control and Prevention. (2016). *Wide-ranging online data for epidemiologic research* (WONDER). Atlanta, GA: CDC, National Center for Health Statistics.

[36] Center for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System, Mortality File. (2015). *Number and age-adjusted rates of drug-poisoning deaths involving opioid analgesics and heroin: United States*, 2000–2014. Atlanta, GA: Center for Disease Control and Prevention.

[37] See: Franklin, G., Sabel, J., Baumgartner, C., Jones, C.M., Mai, J., Banta-Green, C.J., . . . Tauben, D.J. (2015). A comprehensive approach to address the prescription opioid epidemic in Washington State: Milestones and lessons learned. *Am. J. Public Health American Journal of Public Health, 105*(3), 463-469; Compton, W., Boyle, M., & Wargo, E. (2015). Prescription opioid abuse: problems and responses. *Preventive Medicine. 80*, 5-9; Haegerich, T., Paulozzi, L., Manns, B. & Jones, C. (2014). What we know, and don't know, about the impact of state policy and systems-level interventions on prescription drug overdose. *Drug and Alcohol Dependence, 145*, 34-47; Kolodny, A., Courtwright, D., Hwang C., Kreiner, P., Eadie, J., Clark, T., & Alexander, G. (2015). The prescription opioid and heroin crisis: a public health approach to an epidemic of addiction. *Annual Review of Public Health. 36*, 559-74.

Exhibit 3

Meta-Analytic Results: Therapies to Treat Opioid Use Disorder

Topic and specific outcomes measured	No. of effect sizes	Average effect size	Standard error	p-value	Treatment N
Methadone maintenance for opioid use disorder					
Opioid use	8	-0.945	0.304	0.002	623
Crime	3	-0.672	0.112	0.000	259
Hospitalization	3	0.242	0.464	0.602	286
Alcohol use	2	-0.281	0.250	0.261	223
Death	3	-0.236	0.261	0.365	137
STD risky behavior	3	-0.560	0.242	0.021	492
Early initiation of methadone treatment					
Treatment engagement[1]	4	1.185	0.306	0.000	404
Buprenorphine maintenance for opioid use disorder					
Opioid use	9	-0.941	0.181	0.000	793
Emergency department visits	1	-0.026	0.264	0.921	46
Psychiatric symptoms	1	-0.156	0.201	0.437	51
Early initiation of buprenorphine treatment					
Treatment engagement[1]	4	0.994	0.292	0.001	336
Injectable naltrexone for opioid use disorder					
Opioid use	5	-0.566	0.152	0.000	329
Naltrexone implants for opioid use disorder					
Opioid use	4	-0.734	0.046	0.000	247
Buprenorphine implants for opioid use disorder					
Opioid use	2	-0.538	0.156	0.001	222
Cognitive-behavioral coping skills therapy for opioid use					
Opioid use	4	0.006	0.109	0.956	169
Contingency management for opioid use disorder					
Opioid use	9	-0.291	0.068	0.001	520
Treatment retention	7	0.314	0.145	0.031	433

Notes:
[1] Treatment engagement is measured by subsequent entry into community-based methadone treatment within a defined period, typically one month or less.

Medication-assisted treatment for opioid use disorder

Several medication-assisted treatments address opioid use disorder. The medications are intended to prevent withdrawal symptoms and/or block the euphoric effects of opioids.

The preferred treatment for opioid use disorder includes detoxification, stabilization, and maintenance treatment with methadone or buprenorphine.[38] Studies have found a high risk of relapse and an elevated risk of death when treatment is stopped.[39]

Methadone maintenance treatment. Methadone is a synthetic opioid that blocks the effects of opioids, reduces withdrawal symptoms, and relieves cravings. Methadone is dispensed in outpatient clinics that specialize in methadone treatment and is often used in conjunction with behavioral counseling approaches.

We analyzed studies that examined the effect of methadone treatment on opioid misuse, selecting evaluations where comparison groups did not receive any

medicated assisted treatment.[40] These studies typically focus on heroin users, though there is evidence that prescription opioid use disorder can be effectively treated with methadone.[41]

We find that methadone treatment, on average, reduces opioid misuse (see Exhibit 3). Across these programs, opioid use is reduced to 23% among those in treatment versus 58% among controls.

Early initiation of methadone treatment. Research has examined whether engaging opioid-dependent people into treatment sooner improves outcomes.[42] We identified four studies that compared early initiation of methadone therapy to simply referring patients to treatment. Three studies examined the effect of initiating methadone treatment in prison prior to release. One study examined the effect of providing "interim" methadone treatment to people on waitlists for community programs. "Engagement" is measured as a subsequent entry into community-based opioid treatment within a defined period, typically one month or less.

[38] Clausen T. (2015). Commentary on Evans et al. (2015): Coherent long-term treatment approaches—superior in treatment of opioid dependence. *Addiction 110*, 1006-1007; Mauger S., Fraser R., & Gill K. (2014). Utilizing buprenorphine-naloxone to treat illicit and prescription-opioid dependence. *Neuropsychiatric Disease and Treatment 10*, 587-598.

[39] Mark T., Lubran R., McCance-Katz E., Chalk M., & Richardson J. (2015). Medicaid coverage of medication to treat alcohol and opioid dependence. *Journal of Substance Abuse treatment, 55*, 1-5; Mauger et al. (2014); Cousins, G., Boland, F., Courtney, B., Barry, J., Lyons, S., & Fahey T. (2015). Risk of mortality on and off methadone substitution treatment in primary care: a national cohort study. *Addiction, 111*, 73-82; Evans, E., Li, L., Min, J., Huang, D., Urada, D., Liu, L., Hser, Y., & Nosyk, B. (2015). Mortality among individuals for opioid dependence in California, 2006-2010. *Addiction, 110*(6), 996-1005.

[40] We reviewed 64 studies and included eight in our meta-analysis. Among the excluded studies, many compared the efficacy of methadone versus buprenorphine treatment. Others were longer-term follow-ups of trial participants. We also excluded studies with treatment dosages below current guidance (< 50mg/day). See, for example, National Institute for Health and Care Excellence (NICE) guidelines.

[41] Banta-Green, C., Maynard, C., Koepsell, T., Wells, E. and Donovan, D. (2009). Retention in methadone maintenance drug treatment for prescription-type opioid primary users compared to heroin users. Addiction 104, 775-783; Potter, J., Marino, E., Hillhouse, M., Nielsen, S., Wiest, K., Canamar, C., Martin, J., Ang, A., Baker, R., Saxon, A., & Ling, W. (2013). Buprenorphine/naloxone and methadone maintenance treatment outcomes for opioid analgesic, heroin, and combined users: findings from starting treatment with agonist replacement therapies (START). *Journal of Studies on Alcohol and Drugs, 74*(4), 605-13.

[42] Clausen T. (2015). Commentary on Evans et al. (2015): Coherent long-term treatment approaches—superior in treatment of opioid dependence. *Addiction 110*, 1006-1007.

We find that early methadone initiation, on average, increases engagement (see Exhibit 3). Across the four studies in our analysis, 81% of those receiving early methadone treatment subsequently entered community-based programs versus 41% of those who did not.

Buprenorphine maintenance treatment for opioid use disorder

Buprenorphine/buprenorphine-naloxone is an opioid substitution treatment that suppresses withdrawal symptoms and blocks the effects of opioids. Two versions of buprenorphine are used in the treatment of opioid use disorder. Subutex consists of buprenorphine only while suboxone combines buprenorphine and naloxone. The addition of naloxone reduces the probability of overdose and reduces misuse by producing severe withdrawal effects if taken any way except sublingually. Buprenorphine is generally provided in addition to counseling therapies.

Methadone can only be obtained from licensed opioid treatment programs. Buprenorphine can be prescribed in office-based settings by physicians that have completed special training. Buprenorphine can be used to treat both heroin and prescription opioid users.[43]

We reviewed studies that evaluated the effectiveness of buprenorphine maintenance therapy.[44] We find that buprenorphine treatment, on average, reduces opioid misuse (see Exhibit 3).[45]

Early initiation of buprenorphine treatment. We analyzed studies that compare early initiation of buprenorphine treatment to simply referring patients to treatment. The interventions provided temporary, early treatment initiation at a university HIV clinic, an emergency department, a hospital, and a prison. The engagement outcome is measured by subsequent entry into community-based opioid treatment within a defined period, typically one month or less.

We find that early buprenorphine initiation increases treatment engagement. Across these studies, two-thirds of those receiving early treatment subsequently enter community-based programs versus only one-third among comparison subjects.

Buprenorphine taper for prescription opioid use disorder. Open-ended maintenance therapy is standard practice for heroin use disorder. Research has not yet determined if this is appropriate for prescription opioid users.[46] We searched for, but did not find,

---

[43] Potter, J., Marino, E., Hillhouse, M., Nielsen, S., Wiest, K., Canamar, C., Martin, J., Ang, A., Baker, R., Saxon, A., & Ling, W. (2013). Buprenorphine/naloxone and methadone maintenance treatment outcomes for opioid analgesic, heroin, and combined users: findings from starting treatment with agonist replacement therapies (START). *Journal of Studies on Alcohol and Drugs, 74*(4), 605-13; McHugh, R., Nielson, S., & Weiss, R. (2015). Prescription drug abuse: from epidemiology to public policy. *Journal of Substance Abuse Treatment,. 48*(1), 1-7; Moore, B., Fiellin, D., Barry, D., Sullivan, L., Chawarski, M., O'Connor, P., & Schottenfied., R. (2007). Primary care office-based buprenorphine treatment: comparison of heroin and prescription opioid dependent patients. *Journal of General Internal Medicine, 22*(4), 527-530.

[44] These studies compared outcomes for subjects receiving buprenorphine maintenance treatment with those receiving no medication-assisted therapy. Note that many recent studies, excluded from our analysis, compared the efficacy of methadone versus buprenorphine treatment. We also excluded studies with treatment dosages below current guidance (< 8 mg/day).

[45] About 45% of those assigned to treatment were not using opioids at follow up versus only 14% of those in comparison groups.

[46] Langleben, D. (2015.) Buprenorphine-Naloxone treatment of prescription opioid abuse: does past performance predict future results? *Journal of Clinical Psychiatry, 76*(2), 195-197; Brady, K., McCauley, J., & Back, S. (2016). Prescription opioid misuse, abuse, and treatment in the United States: an update. *American Journal of Psychiatry, 173*(1), 18-26.

sufficient evidence regarding tapering prescription opioid-dependent adults off buprenorphine maintenance therapy.[47]

Long-acting injectable medications for opioid use disorder. Patients treated with methadone or buprenorphine may struggle with adherence, as their doses are taken daily or several times a week. In the case of methadone maintenance treatment, patients must receive the daily medication in specialized clinics. Long-acting injectable medications for substance misuse were developed in part to improve treatment adherence. Because these medications are administered as monthly injections, patients do not have to travel to a clinic for treatment every day. Implantable medications that last for six months have more recently been developed. The Washington State Legislature directed WSIPP to review existing literature on FDA-approved long-acting injectable medications.[48] The estimates provided in this section are from that review.[49]

We examined evidence for the effectiveness of three long-acting medications used to treat opioid use disorder: injectable naltrexone, implantable naltrexone, and implantable buprenorphine. We find that these long-acting medications reduce disordered opioid use (see Exhibit 3). Each of these treatments reduces opioid use by about 55%.

---

[47] There are few studies. Some compare longer and shorter taper lengths, and others compare continued maintenance therapy to a taper. Long-term participant follow-up is difficult given participant attrition and the movement of subjects in and out of therapy. See: Blondell, R.D., Ashrafioun, L., Dambra, C.M., Foschio, E.M., Zielinski, A.L., & Salcedo, D.M. (2010). A clinical trial comparing tapering doses of buprenorphine with steady doses for chronic pain and co-existent opioid addiction. *Journal of Addiction Medicine, 4(*3), 140-6; Sigmon, S.C., Dunn, K.E., Saulsgiver, K., Patrick, M.E., Badger, G.J., Heil, S.H.., . . . Higgins, S.T. (2013). A randomized, double-blind evaluation of buprenorphine taper duration in primary prescription opioid abusers. *Jama Psychiatry, 70(*12), 1347-54; Fiellin, D.A., Cutter, C.J., O'Connor, P.G., Schottenfeld, R.S., Moore, B.A., & Barry, D.T. (2014). Primary care-based buprenorphine taper vs maintenance therapy for prescription opioid dependence: A randomized clinical trial. *Jama Internal Medicine, 174(*12), 1947-1954; Weiss, R., Potter, J., Fiellin, D., Byrne, M., Connery, H., Dickinson, W., . . . Andrzej, S. (2011). Adjunctive counseling during brief and extended buprenorphine-naloxone treatment for prescription opioid dependence: A 2-phase randomized controlled trial. *Archives of General Psychiatry, 68(*120), 1238-1246; Weiss, R., Potter, J., Griffin, M., Provost, S., Fizmaurice, G., . . . Carroll, K. (2015). Long-term outcomes from the National Drug Abuse Treatment Clinical Trials Network Prescription Opioid Addiction Treatment Study. *Drug and Alcohol Dependence, 150,* 112-119.

[48] Engrossed Substitute Senate Bill 6052, Chapter 4, Laws of 2015.
[49] Nafziger, M. (2016). *Long-acting injectable medications for alcohol and opiate dependence: Benefit-cost findings* (Document Number 16-12-3901). Olympia: Washington State Institute for Public Policy.

Nonpharmacological therapies for opioid use disorder

We examined the effects of adding psychosocial support to medication-assisted therapy. The studies in our analysis include individuals with either a heroin or prescription opioid disordered use. We report average effect sizes for two therapies: cognitive-behavioral coping skills therapy and contingency management.[50] The control condition for each intervention typically involved physician-assisted medication management or standard/emergency counseling support (non-manualized).

Cognitive-behavioral coping-skills therapy. Cognitive-behavioral coping-skills therapy is a manualized, standalone treatment for alcohol and/or drug use disorder. This intervention emphasizes identifying high-risk situations that could lead to relapse and developing associated coping skills. Clients engage in problem solving, role playing, and homework practice. The intervention is often provided in an individual therapy format but can be conducted in groups as well. Treatment in the included studies occurred over an average of three months.

Studies used in this analysis evaluated the program in a population of opioid users receiving methadone or buprenorphine maintenance treatment. We find no detectable effect of adding cognitive behavioral therapy to pharmacological treatment for opioid misuse (see Exhibit 3).

Contingency management for opioid misuse. Contingency management is a supplement to counseling treatment that rewards participants for attending treatment and/or abstaining from substance use. The intervention reviewed here focused on those with opioid use disorders who were also receiving medicated-assisted drug treatment and counseling.

Contingencies were provided for remaining abstinent. Two methods of contingency management were reviewed: 1) A voucher system where abstinence was rewarded with vouchers exchangeable for goods provided by the clinic or counseling center and 2) a prize or raffle system where clients who remained abstinent could draw from a prize bowl.[51]

We find that the addition of contingency management to medication-assisted therapy reduces opioid use and increases retention in treatment.

3) <u>Integration of behavioral health and primary care</u>

Behavioral health disorders include both mental health and substance use disorders. Behavioral health integration strategies bring behavioral health care into the primary care setting. We investigated collaborative primary care and the use of telemedicine for behavioral health in primary care.

---

[50] We analyzed research on intensive or computer-assisted counseling and determined that treatments in these existing studies were inconsistent and not suitable for meta-analysis.

[51] Treatment in the included studies lasted between one and six months with a weighted average of 3.3 months of contingency management and reward opportunities occurring two to three times per week, on average.

Collaborative primary care

Collaborative primary care aims to improve treatment for patients with behavioral health diagnoses by integrating behavioral health treatment into the primary care setting.

Collaborative primary care models include 1) care management, 2) a "team" approach involving at least two care providers, and 3) measurement-based treatment plans for individual patients.[52] In these programs, patients are screened, by their primary care providers, for behavioral health conditions. Once identified, patients with behavioral health conditions receive an initial assessment and a care manager develops a measurement-based treatment plan.

Care managers can be mental health specialists (e.g. psychologists and psychiatric nurses) or non-behavioral specialists (e.g. social workers and registered nurses) located in primary care settings. The care manager coordinates with a primary care provider and behavioral health care providers to administer care based on this individualized plan and follows up with the patient at regular intervals by phone or in person.

We provide meta-analytic results for collaborative primary care for the following populations:

- Adults with anxiety;
- Adults with depression;
- Older adults with depression;
- Adults with depression and comorbid medical conditions; and
- Older adults with depression and comorbid medical conditions.

Collaborative primary care for anxiety. Anxiety disorders are frequent in primary care settings, but may not be detected or treated appropriately.[53]

We examined the impact of collaborative primary care in reducing anxiety symptoms among adults diagnosed with panic disorder, generalized anxiety disorder, or social anxiety disorder.[54]

We find that, on average, collaborative primary care reduces patients' anxiety symptoms compared to patients with anxiety who receive usual treatment (see Exhibit 4).[55] Immediately after treatment, the rate of anxiety was 15% lower in the intervention group than in the comparison group, on average.

---

[52] Shippee et al. (2013). American Psychiatric Association and the Academy of Psychosomatic Medicine. (2016). *Dissemination of integrated care within adult primary care settings: The Collaborative Care Model.* Retrieved from https://www.psychiatry.org/psychiatrists/practice/professional-interests/integrated-care/collaborative-care-model

[53] Ansseau, M., Dierick, M., Buntinkx, F., Cnockaert, P., De Smedt, J., Van Den Hatue, M., Vander Mijnsbrugge, D. (2004). High prevalence of mental disorders in primary care. *Journal of Affective Disorders, 78*(1), 49-55. Stein., M., Sherbourne, C., Craske, M., Means-Christensen, A., Bystritsky, A., Katon, W., Sullivan, G., Roy-Byrne, P. (2004). Quality of care for primary care patients with anxiety disorders. *The American Journal of Psychiatry, 161*(12), 2230-2237.

[54] We reviewed nine studies and included four rigorous evaluations in our analysis. In the programs, patients received 6-12 months of collaborative care. One study used the Coordinated Anxiety Learning and Management model of collaborative care.

[55] Usual treatment consisted of some combination of treatment from a primary care provider, pharmacotherapy, and referral to a mental health specialist.

Exhibit 4
Meta-Analytic Results: Behavioral Health Integration

Topic and specific outcomes measured	No. of effect sizes	Average effect size	Standard error	p-value	Treatment N
Collaborative primary care for anxiety among adults					
Anxiety	4	-0.247	0.083	0.003	691
Depression	2	-0.113	0.159	0.48	198
Collaborative primary care for depression among adults					
Depression	25	-0.258	0.058	0.000	4,095
Total medical costs[1]	1	-0.048	0.107	0.656	279
Global functioning[2]	1	-0.150	0.154	0.332	114
Collaborative primary care for depression among older adults					
Depression	3	-0.379	0.056	0.000	1,358
Suicidal ideation	2	-0.328	0.100	0.001	1,154
Death	1	-0.019	0.125	0.881	320
Collaborative primary care for depression among adults with comorbid medical conditions					
Depression	12	-0.357	0.049	0.001	1616
Global functioning	3	-0.157	0.084	0.061	684
Blood Pressure - Systolic[3]	2	-0.274	0.178	0.124	133
Blood Pressure - Diastolic[4]	1	-0.528	0.326	0.105	30
HbA1c[5]	2	-0.151	0.163	0.354	242
Cholesterol	1	-0.097	0.149	0.517	380
LDL Cholesterol[6]	1	-0.185	0.220	0.400	98
Collaborative primary care for depression among older adults with comorbid medical conditions					
Depression	3	-0.483	0.110	0.001	262
Blood Pressure–Systolic	1	-0.903	0.383	0.018	32
Blood Pressure–Diastolic	1	-0.929	0.383	0.015	32
HbA1c[5]	1	-0.020	0.162	0.902	128
Telemedicine for posttraumatic stress disorder in primary care					
PTSD	4	-0.253	0.086	0.003	272
Telemedicine for depression in primary care					
Depression	3	-0.460	0.165	0.005	153

Notes:

[1] The "effect size" for this outcome indicates percentage change, not a standardized mean difference effect size.

[2] Global functioning is measured on a numeric scale and rates how well an individual functions in social, occupational, and psychological contexts.

[3] A measure of blood pressure that results when the heart beats and pushes blood through arteries.

[4] A measure of blood pressure that results when the heart rests between beats and receives blood and oxygen.

[5] HbA1c, also called hemoglobin A1c, measures blood glucose levels among patients with diabetes.

[6] Low-density lipoprotein is a type of lipoprotein that transports cholesterol in the bloodstream. High levels can indicate cardio vascular disease.

Collaborative primary care for depression among adults. Depression is the most common behavioral health disorder. About 50% of adults who seek care for depression seek treatment from their primary care provider, rather than a behavioral health specialist.[56]

This review focuses on collaborative primary care programs for adult patients in primary care with depressive disorders, including major or minor depression, dysthymia, or subthreshold depression.

Among included programs, patients received collaborative care for 3-36 months.[57] Care managers were most often nurses. In nine of the included programs, care management was provided by phone. Comparison groups received usual treatment for depression.[58]

On average, patients who receive collaborative primary care experience reduced rates of depression compared with patients who receive usual treatment (see Exhibit 4). Immediately after treatment, rates of depression were 24% lower among patients who received collaborative primary

care for depression relative to patients who received usual treatment, on average.

Collaborative primary care for depression among older adults. Older adults with depression are frequent users of general medical services and are at increased risk of adverse medical conditions and death from suicide.[59] Depressive disorders affect up to 10% of older adults seen in primary care. Few older adults receive appropriate treatment for depression from their primary care provider.[60]

Collaborative primary care programs for older adults with depression have a similar structure to collaborative primary care programs for adults, but care management and treatment approaches are tailored for patients age 60 and over. This approach may include screening patients using the Geriatric Depression Scale[61] and adhering to treatment guidelines for older adult populations.

Among included programs, patients received collaborative care for 3-12 months.[62] Comparison groups received treatment as usual for depression.[63]

---

[56] Wang, P.S., Lane, M., Olfson, M., Pincus, H.A., Wells, K.B., & Kessler, R.C. (2005). Twelve-month use of mental health services in the United States: results from the National Comorbidity Survey Replication. *Arch Gen Psychiatry*, *62*(6), 629-640.

[57] We reviewed 70 studies and included 28 rigorous evaluations in our analysis. Nine of the included evaluations studied name brand programs, These include Re-engineering Systems for Primary Care Treatment (RESPECT), Quality Enhancement by Strategic Teaming (QuEST), Depression Improvement Across Minnesota Offering a New Direction (DIAMOND), Depression Health Enhancement for Latino Patient (D-HELP), Intervention for Depression Improvement (INDI Project), Depression Recurrence Prevention (DRP), and PrimeCare.

[58] Usual treatment for adult depression generally consists of treatment from a primary care provider, pharmacotherapy, referrals to mental health specialists, or a combination of all three.

[59] In this literature, "older adults" was defined as adults age 60 and over.

[60] Unützer, J., Katon, W., Callahan, C.M., Williams, J.W., Hunkeler, E., Harpole, L., Hoffing, M., . . . Lin, E.H.B. (2002). Collaborative care management of late life depression in the primary care setting: A randomized controlled trial. *Journal-American Medical Association, 288*, 2836-2845.

[61] The Geriatric Depression Scale (GDS) is a 30-item self-assessment used to screen for depression among older adults.

[62] We reviewed 16 studies and included nine rigorous evaluations in our analysis. Three of the included evaluations studied name brand programs. These include Prevention of Suicide in Primary Care for the Elderly (PROSPECT), Project Direct, and Improving Mood Promoting Access to Collaborative Treatment (IMPACT).

[63] Usual treatment for depression among older adults is similar to that of usual treatment for adults, but often has a stronger emphasis on pharmacotherapy.

We find that older adult patients who receive collaborative primary care experience reduced rates of depression, on average, when compared with patients who receive usual treatment (see Exhibit 4). Immediately after treatment, rates of depression were 40% lower among older adults who received collaborative primary care relative to older adults who received usual treatment, on average.

We also find evidence for a reduction in suicidal ideation for older adults receiving collaborative primary care for depression, on average.

Collaborative primary care for depression among adults with comorbid medical conditions. Depression and chronic medical conditions like diabetes and heart disease are often comorbid.[64] The association between depression and comorbid health conditions is related to increased mortality, higher medical costs, and functional impairment.[65]

In this review, collaborative primary care programs are focused on adult patients with all levels of depression (i.e. major and minor depression and/or dysthymia) and comorbid medical conditions including diabetes, heart disease, acute coronary syndrome, or hypertension, or had previously experienced a stroke.[66]

On average, collaborative primary care reduces patients' depressive symptoms compared to patients with depression and comorbid illness in usual treatment (see Exhibit 4).[67] Immediately after treatment, the rate of depression was 35% lower in the intervention group than in the comparison group, on average.

We also find evidence of improved global functioning and lower systolic blood pressure among patients receiving collaborative primary care compared to patients receiving usual care, on average.[68]

Collaborative primary care for depression among older adults with comorbid medical conditions. Depression is a risk factor for comorbid medical conditions like diabetes and hypertension, which are more prevalent in older populations than younger adults.[69]

---

[64] Katon, W., Lin, E.H.B., Kroenke, K. (2007). The association of depression and anxiety with medical symptom burden in patients with chronic medical illness. *General Hospital Psychiatry, 29*, 147-155.

[65] Moussavi, S., Chatterji, S., Verdes, E., Tandon, A., Patel, V., Ustun, B. (2007). Depression, chronic diseases, and decrements in health: results from the World Health Surveys. *The Lancet, 370*(9590), 851–858. Naylor, C., Parsonage, M., McDaid, D., Knapp, M., Fossey, M., Galea, A. (2012). *Long-term conditions and mental health. The cost of comorbidities.* The King's Fund and Centre for Mental Health. London, England.

[66] We reviewed 19 studies and included 14 rigorous evaluations in our analysis. In included programs, patients

received treatment for three to 12 months. Four studies used brand name collaborative care models including, the Multifaceted Diabetes and Depression Program, the Collaborative Interventions for Circulation and Depression (COINCIDE) program, and the Improving Mood-Promoting Access to Collaborative Treatment (IMPACT) program.

[67] Usual treatment consisted of patients being informed of their depression diagnosis, receiving pharmacotherapy from their primary care provider and/or being referred to a mental health specialist.

[68] Global functioning is measured on a numeric scale and rates how well individuals function in social, occupational, and psychological contexts. Systolic blood pressure is a secondary outcome measured for patients with comorbid hypertension, diabetes, and heart disease.

[69] Anderson, R., Freedland, K., Clouse, R., Lustman, P. (2001). The prevalence of comorbid depression in adults with diabetes. *Diabetes Care, 24*(6), 1069-1078.

In this analysis, we included collaborative primary care programs focused on older adults[70] diagnosed with all levels of depression and comorbid medical conditions including diabetes and hypertension.[71]

On average, collaborative primary care reduces older adult patients' depressive symptoms, compared to older adult patients in usual treatment (see Exhibit 4). Immediately after treatment, the rate of depression was 47% lower in the intervention group than in the comparison group, on average.

Telemedicine for behavioral health in primary care

Our review focuses on the use of telemedicine to provide or support psychiatric care using videoconferencing or similar remote communications between distinct locations.

In addition to methodological rigor, our meta-analysis of telemedicine for behavioral health adopted the following criteria. First, we only evaluated studies published within the last 15 years (2001 or later). Given advances in technology and digital video communication, studies completed prior to this time were deemed less relevant.

Second, we included studies that focused on treating a specific, diagnosable behavioral health condition. Finally, subjects in reviewed studies received behavioral health services through a remote link while present in a clinical setting, which does not include home-based communication.[72]

We reviewed the literature and report on the effectiveness of telemedicine for the treatment of posttraumatic stress disorder (PTSD) and depression in primary care settings. Our analysis includes studies that evaluated outcomes for individuals randomly assigned to telemedicine for behavioral health or usual care, which typically included in-person psychiatric treatment.[73]

Programs for PTSD. We find telemedicine to be at least as effective as in-person treatment for PTSD. In fact, study participants assigned to telemedicine, on average, had larger reductions in the severity of PTSD than did those receiving treatment as usual (see Exhibit 4).

Programs for depression. We also find telemedicine to be at least as effective as in-person treatment for depression. Study participants assigned to telemedicine, on average, had larger reductions in the severity of depression than did those in the comparison groups.

---

[70] Studies define "Older adults" as 50 years and older.
[71] We reviewed six studies and included three rigorous evaluations in our analysis. In the programs included, patients received treatment for one to 12 months. Three included studies used a name brand collaborative care model called the Improving Mood-Promoting Access to Collaborative Treatment (IMPACT) program.

[72] This exclusion coincides with new legislation in Washington State (Senate Substitute Bill 5175, Chapter 23, Laws of 2015) that requires health plans to reimburse providers for telecare services that take place at a hospital or clinical practice starting in 2017.
[73] We reviewed of 30 studies. Our meta-analyses include four studies evaluating treatment for veterans with PTSD and three studies for treatment of depression in diverse populations.

4) Patient-centered medical homes

The patient-centered medical home (PCMH) model attempts to make health care more efficient by implementing a set of changes to primary care. Medical homes are designed to provide comprehensive care, treating both acute needs and promoting population health. The medical home model emphasizes care coordination across providers, patient engagement, evidence-based care, use of health information technology, and enhanced patient access.[74]

Our meta-analysis focuses on outcomes where costs and benefits can be determined through economic analysis.[75] We reviewed evidence on the effectiveness of patient-centered medical homes in reducing emergency department visits, hospitalizations, specialist visits, and total medical costs. Our effect sizes are percentage changes in utilization or costs.

Evaluations of health care policies and programs often measure two broad types of outcomes: 1) those that reflect the health status of people (e.g., disease incidence) and 2) those that reflect health care system costs and utilization. Cost and utilization measures may or may not be an indication of health status or well-being.

We reviewed, with assistance from the CEbP, 161 medical home studies and identified 15 evaluations, which: 1) evaluated a "full" implementation of the PCMH model;[76]

2) provided sufficient information to calculate effect sizes in terms of percentage changes in health care utilization or cost; 3) reported standard errors that account for the clustering of individuals into practices or clinics;[77] and 4) had sufficient methodological rigor to identify the effects caused by PCMHs.[78]

Medical home providers typically receive a per-member per-month care management payment, in addition to traditional fee-for-service payments, for establishing medical homes. Payers (private health insurers, Medicaid, and Medicare) may also provide pay-for-performance bonuses, usually for meeting certain quality of care measures. In some recent PCMHs, payers also offer providers financial incentives to reduce utilization and costs, such as shared cost-savings.

---

[74] David, G., Saynisch, P., & Smith-McLallen, A. (2016). *The inner workings of the patient centered medical home model*, NBER Working Paper No. 22429.

[75] In 2017, WSIPP will present updated benefit-cost results for patient-centered medical homes.

[76] "Full" implementations are identified by National Committee for Quality Assurance (NCQA) recognition or by

the inclusion of several of the criteria underlying this recognition (e.g., team-based care, comprehensive care, care coordination, system-based approaches to quality, patient-centered care, and enhanced access). We exclude studies that focus exclusively on care management or disease management.

[77] Average effect sizes are calculated using inverse variance weights, which are determined by the standard errors for the percentage change estimates. Studies that do not account for clustering report biased standard error estimates.

[78] Most PCMH studies are observational, examining outcomes before and after implementation in practices that become medical homes with those that do not. We excluded studies that did not have adequate comparison groups. The more rigorous evaluations identify comparison practices that are similar to pilot practices in terms of numbers of providers, physician specialties, use of healthcare information technology, patient demographics, and baseline utilization and costs.

Exhibit 5

Meta-Analytic Results: Patient-Centered Medical Homes

Topic and specific outcomes measured	No. of effect sizes	Average effect size[1]	Standard error	p-value	Treatment N
Patient-centered medical homes implemented in physician-led practices					
Outcomes for general patient populations					
Emergency department visits	8	-0.047	0.017	0.006	705,773
Hospital admissions	7	-0.033	0.017	0.055	692,434
Specialist visits	6	-0.033	0.017	0.047	99,548
Total medical costs	6	-0.020	0.012	0.092	672,902
ACS[2] emergency department visits	5	-0.086	0.050	0.085	87,999
Outcomes for high-risk populations[3]					
Emergency department visits	6	-0.063	0.024	0.009	181,339
Hospital admissions	5	0.004	0.014	0.757	152,528
Specialist visits	4	-0.018	0.017	0.280	6,118
Total medical costs	5	-0.021	0.019	0.280	513,704
ACS[2] emergency department visits	3	-0.072	0.053	0.176	150,152
Patient-centered medical homes implemented in physician-led practices with utilization or cost incentives					
Outcomes for general patient populations					
Emergency department visits	3	-0.073	0.030	0.014	622,252
Hospital admissions	3	-0.044	0.031	0.150	622,252
Total medical costs	2	-0.022	0.016	0.172	604,331
Outcomes for high-risk populations[3]					
Total medical costs	2	-0.023	0.023	0.333	364,111
Patient-centered medical homes implemented in physician-led practices without utilization or cost incentives					
Outcomes for general patient populations					
Emergency department visits	5	-0.031	0.020	0.122	83,521
Hospital admissions	4	-0.032	0.040	0.425	70,182
Total medical costs	4	-0.013	0.024	0.575	68,571
Outcomes for high-risk populations[3]					
Total medical costs	3	-0.025	0.036	0.491	149,593
Patient-centered medical homes implemented in integrated health systems					
Outcomes for general patient populations					
Emergency department visits	1	-0.137	0.018	0.000	305,578
Outcomes for high-risk populations[3]					
Hospital admissions	1	-0.070	0.023	0.002	1,181
Specialist visits	1	0.020	0.023	0.384	1,181
Total medical costs	2	-0.071	0.014	0.000	37,989

Notes:

[1] The "effect sizes" for these outcomes are percentage changes, not a standardized mean difference effect size.

[2] Ambulatory Care Sensitive visits and admissions are potentially avoidable through high quality outpatient care.

[3] High-risk refers to individuals who are more likely to have high utilization or cost due to chronic illness or older age.

Both physician-led primary care practices and integrated health delivery systems have established medical homes. We report outcomes for both (see Exhibit 5). However, most studies included in our analysis evaluated physician-led practices, and our comments focus on their results.

We report outcomes for both general patient populations and for the higher-risk elderly or chronically-ill patients within medical homes.[79]

General patient populations in physician-led practices. Among general patient populations, we find that medical homes, on average, reduce emergency department visits by 5%, hospital admissions by 3%, and specialist visits by 3%. We also find evidence that total medical costs are reduced by 2% (see Exhibit 5).

These estimates are based on eight medical home studies, three of which evaluate PCMHs that include financial incentives to reduce utilization or cost. [80]

High-risk patient populations in physician-led practices. We find that medical homes, on average, reduce emergency department visits by 6% among higher-risk patients. We did not find other reliable effects for high-risk patients.[81]

---

[79] The Medicaid Health Home, a more recent variant of the medical home model, focuses on patients with serious mental illness and substance misuse disorders. WSIPP has reviewed the evidence on health homes; those findings are reported on our website:
http://www.wsipp.wa.gov/BenefitCost/Program/496

[80] See: Rosenthal, M.B., Alidina, S., Friedberg, M.W., Singer, S.J., Eastman, D., Li, Z., & Schneider, E.C. (2016). A difference-in-difference analysis of changes in quality, utilization and cost following the Colorado multi-payer patient-centered medical home pilot. *Journal of General Internal Medicine, 31*(3), 289-296; Friedberg, M.W., Schneider, E.C., Friedberg, M.W., Schneider, E.C., Friedberg, M.W., Schneider, E.C., Rosenthal, M.B., . . . Volpp, K.G. (2015). Effects of a medical home and shared savings intervention on quality and utilization of care. *Jama Internal Medicine, 175*(8), 1362-1368; Cuellar, A., Helmchen, L.A., Gimm, G., Want, J., Burla, S., Kells, B.J., Kicinger, I., . . . Nichols, L.M. (2016). The CareFirst patient-centered medical home program: Cost and utilization effects in its first three years. *Journal of General Internal Medicine,* 1-7.

[81] Sinaiko and colleagues find a significant 4.2% reduction in total costs for high morbidity patients in their meta-analysis of seven medical home implementations. The authors, in collaboration with the researchers evaluating these implementations, were able to impose a consistent definition of high-risk across the studies (two or more comorbidities). Sinaiko, A., Landrum, M., Meyers, D., Alidina, S., & Rosenthal, M. (2016). *A meta-analysis of patient centered medical home initiatives.* PowerPoint presentation prepared for the ASHE 2016 Meetings.

Appendices

I. Topics Examined but Meta-Analyses Not Supported by Literature

There were not sufficient studies to produce meta-analytic results for some topics reviewed in collaboration with the CEbP. This appendix summarizes the relevant literatures. The topics include:

- Medication-assisted therapies for opioid use during pregnancy—buprenorphine vs. methadone
- Long-acting reversible contraception (LARC)
- Prenatal depression screening
- Chronic Care Model (CCM) interventions
- Collaborative primary care for posttraumatic stress disorder

Medication-assisted therapies for opioid use during pregnancy – buprenorphine vs. methadone

Opioid use—including heroin use and prescription drug misuse—is on the rise.[82] Opioid use during pregnancy is strongly linked to increased maternal and neonatal complications, including third trimester bleeding, low birthweight delivery, neonatal mortality, and neonatal abstinence syndrome (narcotic withdrawal symptoms).[83]

Methadone maintenance therapy has been the recommended treatment for pregnant opioid users since the late 1960s. In recent years, buprenorphine has also been used in this population. These two treatments, while both used as a medication-assisted therapy for opioid use disorder, function differently in the body and have different applications in the real world. Methadone is an opioid and is currently considered the "standard of care" for treating pregnant women with opioid use disorder. Patients must visit a dispensing clinic every day to receive their dose of methadone. Buprenorphine is a semi-synthetic, partial agonist opioid receptor modulator—it blocks opioid receptors but is not a full opioid. This medication has been approved for use in opioid-dependent adults since 2002.[84] Buprenorphine can be prescribed by a doctor in a clinic-based setting, in which patients may fill the prescription on their own. For both medications, there is concern about adverse pregnancy and birth outcomes among users.

We located no studies investigating the effects of buprenorphine versus no medication-assisted treatment in pregnant populations. Therefore, we investigated head-to-head studies of two common agonist therapies for

---

[82] Brogly, S.B., Saia, K.A., Walley, A.Y., Du, H.M., & Sebastiani, P. (2014). Prenatal buprenorphine versus methadone exposure and neonatal outcomes: systematic review and meta-analysis. *American Journal of Epidemiology, 180*(7), 673-686.

[83] Minozzi, S., Amato, L., Bellisario, C., Ferri, M., & Davoli, M. (2013). Maintenance agonist treatments for opiate-dependent pregnant women. The Cochrane Library.

[84] Brogly et al. (2014).

opioid-dependent pregnant women: methadone (standard of care) and buprenorphine ("new" treatment). With literature review support from CEbP, we reviewed 64 articles.

We find insufficient evidence to produce meta-analytic results or conduct a benefit-cost analysis on this topic at this time, for two main reasons. First, most studies evaluated treatments in a manner that does not reflect the real world application of these treatments. In randomized controlled trials, all subjects (including buprenorphine-treated subjects) must attend clinics daily to receive their dose of either methadone or buprenorphine. Therefore, effect sizes observed from these studies do not capture the real world difference between methadone and buprenorphine therapies. Second, none of the studies reviewed reported an intent-to-treat analysis. There is differential attrition for methadone and buprenorphine across all studies. Most studies report greater attrition in the buprenorphine group than the methadone group. Since there are no data on a significant proportion of participants, we do not have sufficient evidence to calculate reliable effect sizes comparing these treatments.

Long-acting reversible contraception

We examined studies evaluating the effectiveness of long-acting reversible contraception (LARC) methods for preventing unplanned pregnancies. LARC methods include intrauterine devices (IUD) and birth control implants.

Almost half (49%) of pregnancies in the United States are unplanned.[85] A recent study estimated that the annual medical costs of unplanned pregnancy in the United States were $4.6 billion, and that 53% of those pregnancies were due to failing to consistently use contraception.[86] Although they have higher up-front costs, LARC methods are roughly as effective as sterilization in preventing pregnancy during the first year of typical use and significantly more effective than birth control pills, the patch, or the ring.[87]

In cooperation with the CEbP, we conducted a search for quasi-experimental and randomized controlled trials of LARC to prevent unplanned pregnancy. We identified 38 studies for a more thorough review. Thirty-four of those studies were excluded from our analysis for falling outside our search parameters. For example, these studies did not report on LARC methods or on the outcomes of interest (particularly unintended pregnancies). The remaining four studies were rejected for failing to satisfy WSIPP's standards for methodological rigor. Key reasons for rejection included the use of self-assigned groups for the treatment group or significant and uncontrolled differences between the treatment and control groups.

Prenatal depression screening

Rates of depression for pregnant women are thought to be substantial, peaking at about 17% for women in their third trimester.[88] Research has linked prenatal mental health problems with a variety of poor outcomes,

[85] Finer, L.B., & Zolna, M.R. (2011). Unintended pregnancy in the United States: incidence and disparities, 2006. *Contraception, 84*(5), 478-485.

[86] Trussell, J., Henry, N., Hassan, F., Prezioso, A., Law, A., & Filonenko, A. (2013). Burden of unintended pregnancy in the United States: potential savings with increased use of long-acting reversible contraception. *Contraception, 87*(2), 154-161.

[87] http://www.acog.org/Patients/FAQs/Long-Acting-Reversible-Contraception-LARC-IUD-and-Implant

[88] Bennett, H.A., Einarson, A., Taddio, A., Koren, G., & Einarson, T.R. (2004). Prevalence of depression during pregnancy: systematic review. *Obstetrics & Gynecology, 103*(4), 698-709.

including an increased risk of preterm birth,[89] postpartum mental health problems,[90] and poor infant cognitive development.[91]

In cooperation with the CEbP, we searched for studies evaluating the effectiveness of prenatal screening for maternal depression as well as screening in conjunction with pharmacological treatments and/or psychotherapy. We attempted to identify studies that evaluated how prenatal depression screening or screening plus treatment could affect maternal outcomes, like postpartum depression, and/or infant outcomes, including pre-term birth. We identified only two studies that satisfied these search parameters. One study failed to separately analyze pregnant and postpartum women. The other study had several methodological problems that included small sample sizes and high attrition rates. At this time, we have insufficient evidence to conduct a meta-analysis of pre-partum depression screening.

Chronic Care Model interventions

The Chronic Care Model (CCM) focuses on the care for patients with conditions that require ongoing management, such as diabetes, coronary heart disease, or asthma. The model emphasizes effective team care, support for patient self-management, decision support to increase use of evidence-based practices, patient registries and other supportive information technology, and links to available community resources.[92] Elements of the CCM have been adopted in the patient-centered home model.

In cooperation with the CEbP, we identified several evaluations of CCM implementations. Among the studies identified for our review, a few measured hospital and emergency department utilization outcomes for patients in CCM practices. Unfortunately, these studies either had poor research designs or other methodological problems that limited the usefulness of findings. Several studies reported health related outcomes, such as changes in HbA1c, cholesterol levels, or blood pressure, for patients in CCM practices. However, each study typically focused on patients with a given chronic condition (i.e. diabetes). At this time, we did not feel that there were a sufficient number of studies for a given patient population to pursue a meta-analysis for condition-specific outcomes.

Collaborative primary care for posttraumatic stress disorder

Many individuals with posttraumatic stress disorder (PTSD) do not seek mental health treatment and their symptoms can go undetected in primary care settings.[93] Even when PTSD symptoms are detected in primary care settings, patients may not receive adequate treatment.

At this time, we do not find sufficient evidence to produce meta-analytic results on the impact of collaborative primary care for individuals with PTSD.[94] We conducted a literature review and identified ten

---

[89] Grigoriadis, S., VonderPorten, E.H., Mamisashvili, L., Tomlinson, G., Dennis, C.L., Koren, G., Steiner, M. (2013). The impact of maternal depression during pregnancy on perinatal outcomes: A systematic review and meta-analysis. *The Journal of Clinical Psychiatry, 74*(4), e321–41.

[90] Thoppil, J., Riutcel, T.L., & Nalesnik, S.W. (2005). Early intervention for perinatal depression. *American Journal of Obstetrics and Gynecology*, *192*(5), 1446-1448.

[91] Brouwers, E.P., van Baar, A.L., & Pop, V.J. (2001). Maternal anxiety during pregnancy and subsequent infant development. *Infant Behavior and Development*, *24*(1), 95-106.

[92] See Pearson, M.L., Wu, S., Schaefer, J., Bonomi, A.E., Shortell, S.M., Mendel, P.J., Marsteller, J.A., . . . Keeler, E.B. (2005). Assessing the implementation of the chronic care model in quality improvement collaboratives. *Health Services Research, 40*(4), 978-996; Coleman, K., Austin, B., Brach, C., & Wagner E. (2009). Evidence on the chronic care model in the new millennium. *Health Affairs, 28*(1), 75-85.

[93] Taubman-Ben-Ari, O., Rabinowitz. J., Feldman, D., & Vaturi, R. (2001). Post-traumatic stress disorder in primary care settings: prevalence and physicians' detection. *Psychol Med, 31*, 555–60.

evaluations to be examined more thoroughly. Of these evaluations, eight were excluded from further analysis because they did not meet WSIPP's methodological standards (i.e. inadequate comparison groups and high attrition rates), did not report our primary outcome of interest (PTSD symptom severity), and did not fit the definition of collaborative primary care.[95] Two studies did meet methodological standards, reported PTSD outcomes, and were defined as collaborative primary care. However, we could not calculate a reliable effect size estimate at this time because these studies varied across interventions (i.e. types of care management, follow-up periods, and populations).

---

[94] WSIPP has conducted meta-analyses and benefit-cost analyses on other treatments for posttraumatic stress disorder for cognitive behavioral therapy (CBT) for adult posttraumatic stress disorder and Eye Movement Desensitization and Reprocessing (EMDR) for adult posttraumatic stress disorder. For the most up-to-date results, please visit: http://www.wsipp.wa.gov/BenefitCost/Program/241 and http://www.wsipp.wa.gov/BenefitCost/Program/635, respectively.
[95] Excluded studies used collaborative care models but did not specifically focus on patients treated in primary care settings.

II. Studies used in the Meta-Analyses

Intensive behavioral interventions for smoking cessation during pregnancy

Albrecht, S.A., Caruthers, D., Patrick, T., Reynolds, M., Salamie, D., Higgins, L.W., . . . Mlynarchek, S. (2006). A randomized controlled trial of a smoking cessation intervention for pregnant adolescents. *Nursing Research, 55*(6), 402-410.

Bullock, L., Everett, K.D., Mullen, P.D., Geden, E., Longo, D.R., & Madsen, R. (2009). Baby BEEP: A randomized controlled trial of nurses' individualized social support for poor rural pregnant smokers. *Maternal and Child Health Journal, 13*(3), 395-406.

Cook, C., Ward, S., Myers, S., & Spinnato, J. (1995). A prospective, randomized evaluation of intensified therapy for smoking reduction in pregnancy. *American Journal of Obstetrics and Gynecology: Part 2, 172*(1), 290.

Dornelas, E.A., Magnavita, J., Beazoglou, T., Fischer, E.H., Oncken, C., Lando, H., Greene, J., Barbagallo, J., Stepnowski, R., & Gregonis, E. (2006). Efficacy and cost-effectiveness of a clinic-based counseling intervention tested in an ethnically diverse sample of pregnant smokers. *Patient Education and Counseling, 64,* 342-349.

El-Mohandes, A.A., El-Khorazaty, M.N., Kiely, M., & Gantz, M.G. (2011). Smoking cessation and relapse among pregnant African-American smokers in Washington, DC. *Maternal and Child Health Journal, 15,* 96-105.

Ershoff, D.H., Quinn, V.P., Boyd, N.R., Stern, J., Gregory, M., & Wirtschafter, D. (1999). The Kaiser Permanente prenatal smoking cessation trial: when more isn't better, what is enough? *American Journal of Preventive Medicine, 17*(3), 161-168.

McBride, C.M. (1999). Prevention of relapse in women who quit smoking during pregnancy. *American Journal of Public Health, 89*(5), 706-711.

Naughton, F., Prevost, A.T., Gilbert, H., & Sutton, S. (2012). Randomized controlled trial evaluation of a tailored leaflet and SMS text message self-help intervention for pregnant smokers (MiQuit). *Nicotine & Tobacco Research, 14*(5), 569-577.

Patten, C.A., Windsor, R.A., Renner, C.C., Enoch, C., Hochreiter, A., Nevak, C., . . . Brockman, T. (2010). Feasibility of a tobacco cessation intervention for pregnant Alaska Native women. *Nicotine and Tobacco Research, 12*(2), 79-87.

Rigotti, N.A., Park, E.R., Regan, S., Chang, Y., Perry, K., Loudin, B., & Quinn, V. (2006). Efficacy of telephone counseling for pregnant smokers. *Obstetrics & Gynecology, 108*(1), 83-92.

Ruger, J.P., Weinstein, M.C., Hammond, S.K., Kearney, M.H., & Emmons, K.M. (2008). Cost-effectiveness of motivational interviewing for smoking cessation and relapse prevention among low-income pregnant women: A randomized controlled trial. *Value in Health, 11*(2), 191-198.

Secker-Walker, R.H., Solomon, L.J., Flynn, B.S., Skelly, J.M., Lepage, S.S., Goodwin, G.D., & Mead, P.B. (1994). Individualized smoking cessation counseling during prenatal and early postnatal care. *American Journal of Obstetrics and Gynecology, 171*(5), 1347-1355.

Secker-Walker, R.H., Solomon, L.J., Flynn, B.S., Skelly, J.M., & Mead, P.B. (1998). Reducing smoking during pregnancy and postpartum: physician's advice supported by individual counseling. *Preventive Medicine, 27*(3), 422-430.

Sexton, M., & Hebel, J.R. (1984). A clinical trial of change in maternal smoking and its effect on birth weight. *Jama: the Journal of the American Medical Association, 251*(7), 911-915.

Stotts, A.L., Diclemente, C.C., & Dolan-Mullen, P. (2002). One-to-one: A motivational intervention for resistant pregnant smokers. *Addictive Behaviors, 27*(2), 275-292.

Stotts, A.L., DeLaune, K.A., Schmitz, J.M., & Grabowski, J. (2004). Impact of a motivational intervention on mechanisms of change in low-income pregnant smokers. *Addictive Behaviors, 29*(8), 1649-1657.

Stotts, A.L., Groff, J.Y., Velasquez, M.M., Benjamin-Garner, R., Green, C., Carbonari, J.P., & DiClemente, C.C. (2009). Ultrasound feedback and motivational interviewing targeting smoking cessation in the second and third trimesters of pregnancy. *Nicotine & Tobacco Research, 11*(8), 961-968.

Contingency management for smoking cessation during pregnancy

Heil, S.H., Higgins, S.T., Bernstein, I.M., Solomon, L.J., Rogers, R.E., Thomas, C.S., . . . Lynch, M.E. (2008). Effects of voucher-based incentives on abstinence from cigarette smoking and fetal growth among pregnant women. *Addiction (Abingdon, England), 103*(6), 1009-18.

Higgins, S.T., Heil, S.H., Solomon, L.J., Bernstein, I.M., Lussier, J.P., Abel, R.L., . . . Badger, G.J. (2004). A pilot study on voucher-based incentives to promote abstinence from cigarette smoking during pregnancy and postpartum. *Nicotine & Tobacco Research, 6(6)*, 1015-20.

Higgins, S.T., Washio, Y., Lopez, A.A., Heil, S.H., Solomon, L.J., Lynch, M.E., . . . Bernstein, I.M. (2014). Examining two different schedules of financial incentives for smoking cessation among pregnant women. *Preventive Medicine, 68,* 51-57.

Ondersma, S.J., Svikis, D.S., Lam, P.K., Connors-Burge, V.S., Ledgerwood, D.M., & Hopper, J.A. (2012). A randomized trial of computer-delivered brief intervention and low-intensity contingency management for smoking during pregnancy. *Nicotine & Tobacco Research, 14*(3), 351-60.

Tappin, D., Bauld, L., Purves, D., Boyd, K., Sinclair, L., MacAskill, S., . . . Cessation in Pregnancy Incentives Trial Team. (2015). Financial incentives for smoking cessation in pregnancy: randomised controlled trial. *Bmj (clinical Research Ed.), 350,* h134.

Tuten, M., Fitzsimons, H., Chisolm, M.S., Nuzzo, P.A., & Jones, H.E. (2012). Contingent incentives reduce cigarette smoking among pregnant, methadone-maintained women: results of an initial feasibility and efficacy randomized clinical trial. *Addiction, 107*(10), 1868-1877.

Nicotine replacement treatment during pregnancy

Berlin, I., Grange, G., Jacob, N., & Tanguy, M.L. (2014). Nicotine patches in pregnant smokers: randomised, placebo controlled, multicentre trial of efficacy. *BMJ, 348,* g1622.

Coleman, T., Cooper, S., Thornton, J.G., Grainge, M.J., Watts, K., Britton, J., & Lewis, S. (2012). A randomized trial of nicotine-replacement therapy patches in pregnancy. *Obstetrical & Gynecological Survey, 67(7)*, 387-388.

El-Mohandes, A.A., Windsor, R., Tan, S., Perry, D.C., Gantz, M.G., & Kiely, M. (2013). A randomized clinical trial of trans-dermal nicotine replacement in pregnant African-American smokers. *Maternal and Child Health Journal, 17(*5), 897-906.

Oncken, C., Dornelas, E., Greene, J., Sankey, H., Glasmann, A., Feinn, R., & Kranzler, H.R. (2008). Nicotine gum for pregnant smokers: a randomized controlled trial. *Obstetrics and Gynecology, 112*(4), 859-67.

Pollak, K.I., Oncken, C.A., Lipkus, I.M., Lyna, P., Swamy, G.K., Pletsch, P.K., . . . Myers, E.R. (2007). Nicotine replacement and behavioral therapy for smoking cessation in pregnancy. *American Journal of Preventive Medicine, 33*(4), 297-305.

Postpartum smoking relapse prevention

Jiménez-Muro, A., Nerín, I., Samper, P., Marqueta, A., Beamonte, A., Gargallo, P., . . . Rodríguez, G. (2013). A proactive smoking cessation intervention in postpartum women. *Midwifery, 29*(3), 240-245.

McBride, C.M. (1999). Prevention of relapse in women who quit smoking during pregnancy. *American Journal of Public Health, 89*(5), 706-711.

Reitzel, L.R., Vidrine, J.I., Businelle, M.S., Kendzor, D.E., Costello, T.J., Li, Y., . . . Wetter, D. W. (2010). Preventing postpartum smoking relapse among diverse low-income women: a randomized clinical trial. *Nicotine & Tobacco Research, 12*(4), 326-35.

Ruger, J.P., Weinstein, M.C., Hammond, S.K., Kearney, M.H., & Emmons, K.M. (2008). Cost-Effectiveness of Motivational Interviewing for Smoking Cessation and Relapse Prevention among Low-Income Pregnant Women: A Randomized Controlled Trial. *Value in Health, 11*(2), 191-198.

Interventions to prevent excessive gestational weight gain in the general population

Althuizen, E., Wijden, C.L.V.D., Mechelen, W.V., Seidell, J.C., & Poppel, M.N.M.V. (2012). The effect of a counseling intervention on weight changes during and after pregnancy: a randomised trial. *BJOG: an International Journal of Obstetrics & Gynecology, 120(*1), 92-99.

Barakat, R., Lucia, A., & Ruiz, J.R. (2009). Resistance exercise training during pregnancy and newborn's birth size: a randomised controlled trial. *International Journal of Obesity, 33*(9), 1048-1057.

Barakat, R., Pelaez, M., Lopez, C., Lucia, A., & Ruiz, J.R. (2013). Exercise during pregnancy and gestational diabetes-related adverse effects: a randomised controlled trial. *British Journal of Sports Medicine, 47*(10), 630-36.

Haakstad, L.A.H., & Bø, K. (2011). Effect of regular exercise on prevention of excessive weight gain in pregnancy: A randomised controlled trial. *The European Journal of Contraception and Reproductive Health Care, 16*(2), 116-125.

Hui, A.L., Ludwig, S.M., Gardiner, P., Sevenhuysen, G., Murray, R., Morris, M., & Shen, G.X. (2006). Community-based exercise and dietary intervention during pregnancy: A pilot study. *Canadian Journal of Diabetes, 30*(2), 169-175.

Hui, A.L., Back, L., Ludwig, S., Gardiner, P., Sevenhuysen, G., Dean, H.J., . . . Shen, G.X. (2014). Effects of lifestyle intervention on dietary intake, physical activity level, and gestational weight gain in pregnant women with different pre-pregnancy Body Mass Index in a randomized control trial. *BMC Pregnancy and Childbirth, 14*(1), 331-40.

Olson, C.M., Strawderman, M.S., & Reed, R.G. (2004). Efficacy of an intervention to prevent excessive gestational weight gain. *American Journal of Obstetrics and Gynecology, 191*(2), 530-536.

Polley, B.A., Wing, R.R., & Sims, C.J. (2002). Randomized controlled trial to prevent excessive weight gain in pregnant women. *International Journal of Obesity, 26*(11), 1494-1502.

Ronnberg, A.K., Ostlund, I., Fadl, H., Gottvall, T., & Nilsson, K. (2015). Intervention during pregnancy to reduce excessive gestational weight gain-a randomised controlled trial. *BJOG: an International Journal of Obstetrics & Gynaecology, 122*(4), 537-544.

Ruiz, J.R., Perales, M., Pelaez, M., Lopez, C., Lucia, A., & Barakat, R. (2013). Supervised exercise-based intervention to prevent excessive gestational weight gain: a randomized controlled trial. *Mayo Clinic Proceedings, 88*(12), 1388-97.

Smith, K.M. (2014). *The Blossom Project Online: Use of a behaviorally-based website to promote physical activity and prevent excessive gestational weight gain in previously sedentary pregnant women*. Digital Repository @ Iowa State University.

Stafne, S.N., Salvesen, K.A., Romundstad, P.R., Eggebø, T.M., Carlsen, S.M., & Mørkved, S. (2012). Regular exercise during pregnancy to prevent gestational diabetes: a randomized controlled trial. *Obstetrics and Gynecology, 119*(1), 29-36.

Interventions to prevent excessive gestational weight gain among women with obesity-related risk factors

Bogaerts, A.F., Devlieger, R., Nuyts, E., Witters, I., Gyselaers, W., & Van den Bergh, B.R. (2013). Effects of lifestyle intervention in obese pregnant women on gestational weight gain and mental health: a randomized controlled trial. *International Journal of Obesity, 37*(6), 814-21.

Dodd, J.M., Turnbull, D., McPhee, A.J., Deussen, A.R., Grivell, R.M., Yelland, L.N., . . . Robinson, J.S. (2014). Antenatal lifestyle advice for women who are overweight or obese. *Obstetrical & Gynecological Survey, 69*(6), 311-313.

Harrison, C.L., Lombard, C.B., Strauss, B.J., & Teede, H.J. (2013). Optimizing healthy gestational weight gain in women at high risk of gestational diabetes: a randomized controlled trial. *Obesity, 21*(5), 904-909.

Hawkins, M., Hosker, M., Marcus, B.H., Rosal, M.C., Braun, B., Stanek, E.J., . . . Chasan-Taber, L. (2015). A pregnancy lifestyle intervention to prevent gestational diabetes risk factors in overweight Hispanic women: a feasibility randomized controlled trial. *Diabetic Medicine, 32(*1), 108-15.

Luoto, R., Kinnunen, T.I., Aittasalo, M., Kolu, P., Raitanen, J., Ojala, K., Mansikkamäki, K., . . . Tulokas, S. (2011). Primary prevention of gestational diabetes mellitus and large-for-gestational-age newborns by lifestyle counseling: A cluster-randomized controlled trial. *Plos Medicine, 8*(5), e1001036.

Nobles, C., Marcus, B.H., Stanek, E.J., Braun, B., Whitcomb, B.W., Solomon, C.G., . . . Chasan-Taber, L. (2015). Effect of an exercise intervention on gestational diabetes mellitus: a randomized controlled trial. *Obstetrics and Gynecology, 125(*5), 1195-204.

Oostdam, N., van Poppel, M.N.M., Wouters, M.G.A.J., Eekhoff, E.M.W., Bekedam, D.J., Kuchenbecker, W.K.H., . . . Mechelen, W. van. (2012). No effect of the FitFor2 exercise programme on blood glucose, insulin sensitivity, and

birthweight in pregnant women who were overweight and at risk for gestational diabetes: Results of a randomised controlled trial. *BJOG: An International Journal of Obstetrics & Gynaecology, 119,* 1098-1107.

Poston, L., Briley, A.L., Barr, S., Bell, R., Croker, H., Coxon, K., . . . Sandall, J. (2013). Developing a complex intervention for diet and activity behaviour change in obese pregnant women (the UPBEAT trial); assessment of behavioural change and process evaluation in a pilot randomised controlled trial. *BMC Pregnancy and Childbirth, 13*(1) 148-164.

Poston, L., Bell, R., Croker, H., Flynn, A.C., Godfrey, K.M., Goff, L., . . . Briley, A. (2015). Effect of a behavioural intervention in obese pregnant women (the UPBEAT study): a multicentre, randomised controlled trial. *The Lancet. Diabetes & Endocrinology, 3*(10), 767-777.

Quinlivan, J.A., Lam, L.T., & Fisher, J. (2011). A randomised trial of a four-step multidisciplinary approach to the antenatal care of obese pregnant women. *Australian and New Zealand Journal of Obstetrics and Gynecology, 51*(2), 141-146.

Renault, K.M., Norgaard, K., Nilas, L., Carlsen, E.M., Cortes, D., Pryds, O., & Secher, N.J. (2014). The Treatment of Obese Pregnant Women (TOP) study: a randomized controlled trial of the effect of physical activity intervention assessed by pedometer with or without dietary intervention in obese pregnant women. *American Journal of Obstetrics and Gynecology, 210*(2), 134.el-9.

Thornton, Y.S., Smarkola, C., Kopacz, S.M., & Ishoof, S.B. (2009). Perinatal outcomes in nutritionally monitored obese pregnant women: a randomized clinical trial. *Journal of the National Medical Association, 101*(6), 569-577.

Vesco, K.K., Karanja, N., King, J.C., Gillman, M.W., Leo, M.C., Perrin, N., . . . Stevens, V.J. (2014). Efficacy of a group-based dietary intervention for limiting gestational weight gain among obese women: a randomized trial. *Obesity, 22*(9), 1989-96.

Group prenatal care

Fausett, M.B. (2014). *Centering Pregnancy (CP): A Longitudinal Correlational Study Designed to Evaluate Maternal and Fetal Outcomes After Participation in CP*.

Ford, K., Weglicki, L., Kershaw, T., Schram, C., Hoyer, P.J., & Jacobson, M.L. (2002). Effects of a prenatal care intervention for adolescent mothers on birth weight, repeat pregnancy, and educational outcomes at one year postpartum. *The Journal of Perinatal Education, 11*(1), 35-38.

Ickovics, J.R. (2007). Group prenatal care and perinatal outcomes: A randomized controlled trial. *Obstetrics and Gynecology, 111*(4), 993-994.

Ickovics, J.R., Earnshaw, V., Lewis, J.B., Kershaw, T.S., Magriples, U., Stasko, E., . . . Tobin, J.N. (2016). Cluster randomized controlled trial of group prenatal care: perinatal outcomes among adolescents in New York City health centers. *American Journal of Public Health, 106*(2), 359-365.

Ickovics, J.R., Reed, E., Magriples, U., Westdahl, C., Schindler, R.S., & Kershaw, T.S. (2011). Effects of group prenatal care on psychosocial risk in pregnancy: Results from a randomised controlled trial. *Psychology & Health, 26*(2), 235-250.

Kennedy, H.P., Farrell, T., Paden, R., Hill, S., Jolivet, R.R., Cooper, B.A., & Rising, S.S. (2011). A randomized clinical trial of group prenatal care in two military settings. *Military Medicine, 176(*10), 1169-77.

Enhanced prenatal care programs delivered through Medicaid

Arima, Y., Guthrie, B.L., Rhew, I.C., & De Roos, A.J. (2009). The impact of the First Steps prenatal care program on birth outcomes among women receiving Medicaid in Washington State. *Health Policy (Amsterdam, Netherlands), 92*(1), 49-54.

Buescher, P.A., Roth, M.S., Williams, D., & Goforth, C.M. (1991). An evaluation of the impact of maternity care coordination on Medicaid birth outcomes in North Carolina. *American Journal of Public Health, 81*(12), 1625-9.

Hillemeier, M.M., Domino, M.E., Wells, R., Goyal, R.K., Kum, H.C., Cilenti, D., . . . Basu, A. (2015). Effects of maternity care coordination on pregnancy outcomes: propensity-weighted analyses. *Maternal and Child Health Journal, 19*(1), 121-7.

Korenbrot, C.C., Gill, A., Clayson, Z., & Patterson, E. (1995). Evaluation of California's statewide implementation of enhanced perinatal services as Medicaid benefits. *Public Health Reports (Washington, D.C.: 1974), 110*(2).

Nason, C.S., Alexander, G.R., Pass, M.A., & Bolland, J.M. (2003). An evaluation of a Medicaid managed maternity program: the impact of comprehensive care coordination on utilization and pregnancy outcomes. *Journal of Health and Human Services Administration, 26*(2), 239-67.

Willems Van Dijk, J., Anderko, L., & Stetzer, F. (2011). The impact of prenatal care coordination on birth outcomes. *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 40*(1), 98-108.

Non-Medicaid enhanced prenatal care for adolescents

Hardy, J.B., King, T.M., & Repke, J.T. (1987). The Johns Hopkins Adolescent Pregnancy Program: an evaluation. *Obstetrics and Gynecology, 69*(3), 300-6.

Korenbrot, C.C., Showstack, J., Loomis, A., & Brindis, C. (1989). Birth weight outcomes in a teenage pregnancy case management project. *Journal of Adolescent Health Care, 10*(2), 97-104.

Sangalang, B.B., Barth, R.P., & Painter, J.S. (2006). First birth outcomes and timing of second births: A statewide case management program for adolescent mothers. *Health & Social Work, 31*(1), 54-63.

Covington, D.L., Peoples-Sheps, M.D., Buescher, P.A., Bennett, T.A., & Paul, M.V. (1998). An Evaluation of an Adolescent Prenatal Education Program. *American Journal of Health Behavior, 22*(5), 323-33.

Non-Medicaid enhanced prenatal care programs for African-American women

Herman, A.A., Berendes, H.W., Yu, K.F., Cooper, L.C., Overpeck, M.D., Rhoads, G., . . . Coates, D.L. (1996). Evaluation of the effectiveness of a community-based enriched model prenatal intervention project in the District of Columbia. *Health Services Research, 31*(5), 609-21.

Klerman, L.V., Ramey, S.L., Goldenberg, R.L., Marbury, S., Hou, J., & Cliver, S.P. (2001). A randomized trial of augmented prenatal care for multiple-risk, Medicaid-eligible African American women. *American Journal of Public Health, 91*(1), 105-11.

Norbeck, J.S., DeJoseph, J.F., & Smith, R.T. (1996). A randomized trial of an empirically-derived social support intervention to prevent low birthweight among African American women. *Social Science & Medicine, 43*(6), 947-954.

Peoples, M.D., Grimson, R.C., & Daughtry, G.L. (1984). Evaluation of the effects of the North Carolina Improved Pregnancy Outcome Project: implications for state-level decision-making. *American Journal of Public Health, 74*(6), 549-54.

Prenatal home visiting programs delivered by professional providers

Meghea, C.I., Raffo, J.E., Zhu, Q., & Roman, L. (2013). Medicaid home visitation and maternal and infant healthcare utilization. *American Journal of Preventive Medicine, 45*(4), 441-7.

Meghea, C.I., You, Z., Raffo, J., Leach, R.E., & Roman, L.A. (2015). Statewide Medicaid Enhanced Prenatal Care Programs and infant mortality. *Pediatrics, 136*(2), 334-42.

Roman, L., Raffo, J.E., Zhu, Q., & Meghea, C.I. (2014). A statewide Medicaid enhanced prenatal care program: impact on birth outcomes. *Jama Pediatrics, 168*(3), 220-7.

Villar, J., Farnot, U., Barros, F., Victora, C., Langer, A., & Belizan, J.M. (1992). A randomized trial of psychosocial support during high-risk pregnancies. The Latin American Network for Perinatal and Reproductive Research. *The New England Journal of Medicine, 327*(18), 1266-71.

Prenatal home visiting programs delivered by paraprofessionals

Aracena, M., Krause, M., P̌u̇erez, C., M̌u̇endez, M. J., Salvatierra, L., Soto, M., . . . Altimir, C. (2009). A cost-effectiveness evaluation of a home visit program for adolescent mothers. *Journal of Health Psychology, 14*(7), 878-887.

Heins, H.C. Jr., Nance, N.W., & Ferguson, J.E. (1987). Social support in improving perinatal outcome: the Resource Mothers Program. *Obstetrics and Gynecology, 70*(2), 263-6.

Kothari, C.L., Zielinski, R., James, A., Charoth, R.M., & Sweezy, L.C. (2014). Improved birth weight for Black infants: outcomes of a Healthy Start program. *American Journal of Public Health, 104*(96).

Redding, S., Conrey, E., Porter, K., Paulson, J., Hughes, K., & Redding, M. (2015). Pathways community care coordination in low birth weight prevention. *Maternal and Child Health Journal, 19(*3), 643-50.

Rogers, M.M., Peoples-Sheps, M.D., & Suchindran, C. (1996). Impact of a social support program on teenage prenatal care use and pregnancy outcomes. *Journal of Adolescent Health, 19*(2), 132-140.

Methadone maintenance for opioid use

Bale, R.N., Van, S.W.W., Kuldau, J.M., Engelsing, T.M., Elashoff, R.M., & Zarcone, V.P.J. (1980). Therapeutic communities vs methadone maintenance. A prospective controlled study of narcotic addiction treatment: design and one-year follow-up. *Archives of General Psychiatry, 37*(2), 179-193.

Dolan, K.A., Shearer, J., MacDonald, M., Mattick, R.P., Hall, W., & Wodak, A.D. (2003). A randomised controlled trial of methadone maintenance treatment versus wait list control in an Australian prison system. *Drug and Alcohol Dependence, 72*(1), 59-65.

Gronbladh, L. & Gunne, L. (1989). Methadone-assisted rehabilitation of Swedish heroin addicts. *Drug and Alcohol Dependence, 24*(1), 31-37.

Gruber, V.A., Delucchi, K.L., Kielstein, A., & Batki, S.L. (2008). A randomized trial of 6-month methadone maintenance with standard or minimal counseling versus 21-day methadone detoxification. *Drug and Alcohol Dependence,* 94(1), 199-206.

Kinlock, T., Gordon, M., Schwartz, R., O'Grady, K., Fitzgerald, T., & Wilson, M. (2007). A randomized clinical trial of methadone maintenance for prisoners: Results at 1-month post-release. *Drug and Alcohol Dependence, 91*(2-3), 220-227.

Newman, R., & Whitehill, W. (1979). Double-blind comparison of methadone and placebo maintenance treatments of narcotic addicts in Hong Kong. *The Lancet*, *314*(8141), 485-488.

Schwartz, R.P., Highfield, D.A., Jaffe, J.H., Brady, J.V., Butler, C.B., Rouse, C.O., . . . Battjes, R.J. (2006). A randomized controlled trial of interim methadone maintenance. *Archives of General Psychiatry, 63*(1), 102-9.

Schwartz, R.P., Jaffe, J.H., Highfield, D.A., Callaman, J.M., & O'Grady, K.E. (2007). A randomized controlled trial of interim methadone maintenance: 10-Month follow-up. *Drug and Alcohol Dependence, 86*(1), 30-36.

Strain, E.C., Stitzer, M.L., Liebson, I.A., & Bigelow, G.E. (1993). Dose-response effects of methadone in the treatment of opioid dependence. *Annals of Internal Medicine*, *119*(1), 23-27.

Vanichseni, S., Wongsuwan, B., Choopanya, K., & Wongpanich, K. (1991). A controlled trial of methadone maintenance in a population of intravenous drug users in Bangkok: Implications for prevention of HIV. *International Journal of the Addictions, 26*(12), 1.

Wilson, M.E., Schwartz, R.P., O'Grady, K.E., & Jaffe, J.H. (2010). Impact of interim methadone maintenance on HIV risk behaviors. *Journal of Urban Health: Bulletin of the New York Academy of Medicine, 87*(4), 586-591.

Early initiation of methadone treatment

Kinlock, T., Gordon, M., Schwartz, R., O'Grady, K., Fitzgerald, T., & Wilson, M. (2007). A randomized clinical trial of methadone maintenance for prisoners: Results at 1-month post-release. *Drug and Alcohol Dependence, 91*(2-3), 220-227.

McKenzie, M., Zaller, N., Dickman, S., Green, T., Parihk, A., Friedman, P., & Rich, J. (2012). A Randomized Trial of Methadone Initiation Prior to Release from Incarceration. *Substance Abuse, 33(1),* 19-29.

Rich, J.D., McKenzie, M., Larney, S., Wong, J.B., Tran, L., Clarke, J., Noska, A., . . . Zaller, N. (2015). Methadone continuation versus forced withdrawal on incarceration in a combined US prison and jail: a randomised, open-label trial. *Lancet (london, England),* 386(9991), 350-9.

Schwartz, R.P., Highfield, D.A., Jaffe, J.H., Brady, J.V., Butler, C.B., Rouse, C.O., . . . Battjes, R. J. (2006). A randomized controlled trial of interim methadone maintenance. *Archives of General Psychiatry,* 63(1), 102-9.

Buprenorphine maintenance for opioid use

Cropsey, K.L., Lane, P.S., Hale, G.J., Jackson, D.O., Clark, C.B., Ingersoll, K.S., Islam, M.A., Stitzer, M.L. (2011). Results of a pilot randomized controlled trial of buprenorphine for opioid dependent women in the criminal justice system. *Drug and Alcohol Dependence, 119*(3), 172-178.

Fudala, P.J., Bridge, T.P., Herbert, S., Williford, W.O., Chiang, C.N., Jones, K., . . . Tusel, D. (2003). Office-based treatment of opiate addiction with a sublingual-tablet formulation of buprenorphine and naloxone. *The New England Journal of Medicine, 349*(10), 949-958.

Kakko, J., Svanborg, K.D., Kreek, M.J., & Heilig, M. (2003). 1-year retention and social function after buprenorphine-assisted relapse prevention treatment for heroin dependence in Sweden: A randomised, placebo-controlled trial. *Lancet, 361*(9358), 662-668.

Krook, A.L., Brørs, O., Dahlberg, J., Grouff, K., Magnus, P., Røysamb, E., & Waal, H. (2002). A placebo-controlled study of high dose buprenorphine in opiate dependents waiting for medication-assisted rehabilitation in Oslo, Norway. *Addiction, 97*(5), 533-542.

Liebschutz, J.M., Crooks, D., Herman, D., Anderson, B., Tsui, J., Meshesha, L.Z., Dossabhoy, S., Stein, M. (2014). Buprenorphine treatment for hospitalized, opioid-dependent patients: a randomized clinical trial. *Jama Internal Medicine, 174*(8), 1369-76.

Ling, W., Charuvastra, C., et al. (1998). Buprenorphine maintenance treatment of opiate dependence: A multicenter, randomized clinical trial. *Addiction, 93*(4): 475.

Lucas, G.M., Chaudhry, A., Hsu, J., Woodson, T., Lau, B., Olsen, Y., . . . Moore, R.D. (2010). Clinic-based treatment of opioid-dependent HIV-infected patients versus referral to an opioid treatment program: A randomized trial. *Annals of Internal Medicine,* 152(11), 704-711.

Rosenthal, R.N., Ling, W., Casadonte, P., Vocci, F., Bailey, G.L., . . . & Beebe, K.L. (2013). Buprenorphine implants for treatment of opioid dependence: Randomized comparison to placebo and sublingual buprenorphine/naloxone. *Addiction, 108*(12), 2141-2149.

Early initiation of buprenorphine treatment

D'Onofrio, G., Pantalon, M.V., Owens, P.H., Bernstein, S.L., O'Connor, P.G., . . . & Fiellin, D.A. (2015). Emergency department-initiated buprenorphine/naloxone treatment for opioid dependence: A randomized clinical trial. *JAMA, 313*(16), 1636-1644.

Gordon, M.S., Kinlock, T.W., Schwartz, R.P., Fitzgerald, T.T., O'Grady, K.E., & Vocci, F.J. (2014). A randomized controlled trial of prison-initiated buprenorphine: prison outcomes and community treatment entry. *Drug and Alcohol Dependence, 142,* 33-40.

Liebschutz, J.M., Crooks, D., Herman, D., Anderson, B., Tsui, J., Meshesha, L.Z., Dossabhoy, S., Stein, M. (2014). Buprenorphine treatment for hospitalized, opioid-dependent patients: a randomized clinical trial. *Jama Internal Medicine, 174*(8), 1369-76.

Lucas, G.M., Chaudhry, A., Hsu, J., Woodson, T., Lau, B., Olsen, Y., . . . Moore, RD. (2010). Clinic-based treatment of opioid-dependent HIV-infected patients versus referral to an opioid treatment program: A randomized trial. *Annals of Internal Medicine, 152*(11), 704-711.

Injectable naltrexone for opioid use

Comer, S.D., Sullivan, M.A., Yu, E., Rothenberg, J.L., Kleber, H.D., Kampman, K., . . . O'Brien, C.P. (2006). Injectable, sustained-release naltrexone for the treatment of opioid dependence: A randomized, placebo-controlled trial. *Archives of General Psychiatry, 63*(2), 210-218.

Krupitsky, E., Nunes, E.V., Ling, W., Illeperuma, A., Gastfriend, D.R., & Silverman, B.L. (2011). Injectable extended-release naltrexone for opioid dependence: A double-blind, placebo-controlled, multicentre randomised trial. *Lancet, 377*(9776), 1506-1513.

Lee, J.D., McDonald, R., Grossman, E., McNeely, J., Laska, E., Rotrosen, J., & Gourevitch, M.N. (2015). Opioid treatment at release from jail using extended-release naltrexone: A pilot proof-of-concept randomized effectiveness trial. *Addiction, 110*(6), 1008-1014.

Lee, J.D., Friedmann, P.D., Kinlock, T.W., Nunes, E.V., Boney, T.Y., Hoskinson, R.A., . . . O'Brien, C.P. (2016). Extended-release naltrexone to prevent opioid relapse in criminal justice offenders. *New England Journal of Medicine, 374*(13), 1232-1242.

Naltrexone implants for opioid use

Krupitsky, E., Zvartau, E., Blokhina, E., Verbitskaya, E., Wahlgren, V., Tsoy-Podosenin, M., . . . Woody, G.E. (2012). Randomized trial of long-acting sustained-release naltrexone implant vs oral naltrexone or placebo for preventing relapse to opioid dependence. *Archives of General Psychiatry, 69*(9), 973-981.

Kunøe, N., Lobmaier, P., Vederhus, J.K., Hjerkinn, B., Hegstad, S., Gossop, M., . . . Waal, H. (2009). Naltrexone implants after in-patient treatment for opioid dependence: randomised controlled trial. *The British Journal of Psychiatry, 194*(6), 541-546.

Tiihonen, J., Krupitsky, E., Verbitskaya, E., Blokhina, E., Mamontova, O., Föhr, J., . . . Zwartau, E. (2012). Naltrexone implant for the treatment of polydrug dependence: A randomized controlled trial. *The American Journal of Psychiatry, 169*(5), 531-536.

Tiurina, A., Krupitsky, E., Zvartau, E., & Woody, G. (2010). Long acting naltrexone implants for heroin dependence. *European Neuropsychopharmacology, 20*(S1), S79-S80.

Buprenorphine implants for opioid use

Ling, W., Casadonte, P., Bigelow, G., Kampman, K.M., Patkar, A., Bailey, G.L., . . . & Beebe, K.L. (2010). Buprenorphine implants for treatment of opioid dependence: a randomized controlled trial. *JAMA, 304*(14), 1576-1583.

Rosenthal, R.N., Ling, W., Casadonte, P., Vocci, F., Bailey, G.L., Kampman, K., . . . Beebe, K.L. (2013). Buprenorphine implants for treatment of opioid dependence: Randomized comparison to placebo and sublingual buprenorphine/naloxone. *Addiction, 108*(12), 2141-2149.

Cognitive-behavioral coping skills therapy for opioid misuse

Fiellin, D.A., Barry, D.T., Sullivan, L.E., Cutter, C.J., Moore, B.A., O'Connor, P.G., & Schottenfeld, R.S. (2013). A randomized trial of cognitive behavioral therapy in primary care-based buprenorphine. *The American Journal of Medicine, 126(1).*

Ling, W., Hillhouse, M., Ang, A., Jenkins, J., & Fahey, J. (2013). Comparison of behavioral treatment conditions in buprenorphine maintenance. *Addiction, 108*(10), 1788-1798.

Moore, B.A., Barry, D.T., Sullivan, L.E., O'Connor, P.G., Cutter, C.J., Schottenfeld, R.S., & Fiellin, D.A. (2012). Counseling and directly observed medication for primary care buprenorphine/naloxone maintenance. *Journal of Addiction Medicine,* 1.

Moore, B.A., Fazzino, T., Barry, D.T., Fiellin, D.A., Cutter, C.J., Schottenfeld, R.S., & Ball, S.A. (2013). The Recovery Line: A pilot trial of automated, telephone-based treatment for continued drug use in methadone maintenance. *Journal of Substance Abuse Treatment, 45*(1), 63-69.

Contingency management for opioid misuse

Brooner, R.K., Kidorf, M.S., King, V.L., Stoller, K.B., Neufeld, K.J., & Kolodner, K. (2007). Comparing adaptive stepped care and monetary-based voucher interventions for opioid dependence. *Drug and Alcohol Dependence, 88,* S14-S23.

Carroll, K.M., Ball, S.A., Nich, C., O'Connor, P.G., Eagan, D.A., Frankforter, . . . Rounsaville, B.J. (2001). Targeting behavioral therapies to enhance naltrexone treatment of opioid dependence: efficacy of contingency management and significant other involvement. *Archives of General Psychiatry, 58*(8), 755-761.

Chen, W., Hong, Y., Zou, X., McLaughlin, M.M., Xia, Y., & Ling, L. (2013). Effectiveness of prize-based contingency management in a methadone maintenance program in China. *Drug and Alcohol Dependence, 133*(1), 270-274.

Hser, Y.I., Li, J., Jiang, H., Zhang, R., Du, J., Zhang, C., Zhang, B., . . . Zhao, M. (2011). Effects of a randomized contingency management intervention on opiate abstinence and retention in methadone maintenance treatment in China. *Addiction, 106*(10), 1801-1809.

Kidorf, M., Brooner, R.K., Gandotra, N., Antoine, D., King, V.L., Peirce, J., & Ghazarian, S. (2013). Reinforcing integrated psychiatric service attendance in an opioid-agonist program: A randomized and controlled trial. *Drug and Alcohol Dependence, 133*(1), 30-36.

Ling, W., Hillhouse, M., Ang, A., Jenkins, J., & Fahey, J. (2013). Comparison of behavioral treatment conditions in buprenorphine maintenance. *Addiction, 108*(10), 1788-1798.

Preston, K.L., Umbricht, A., & Epstein, D.H. (2000). Methadone dose increase and abstinence reinforcement for treatment of continued heroin use during methadone maintenance. *Archives of General Psychiatry, 57*(4), 395-404.

Preston, K.L., Umbricht, A., & Epstein, D.H. (2002). Abstinence reinforcement maintenance contingency and one-year follow-up. *Drug and AlcoholDependence, 67*(2), 125-137.

Rowan-Szal, G.APD., Joe, GWED., Hiller, MLPD., & Simpson, DDPD. (1997). Increasing early engagement in methadone treatment. *Journal of Maintenance in the Addictions, 1*(1), 49-61.

Collaborative primary care for anxiety

Craske, M.G., Stein, M.B., Sullivan, G., Sherbourne, C., Bystritsky, A., Rose, R.D., . . . Roy-Byrne, P. (2011). Disorder-specific impact of coordinated anxiety learning and management treatment for anxiety disorders in primary care. *Archives of General Psychiatry, 68*(4), 378-88.

Muntingh, A., van der Feltz-Cornelis, C., van Marwijk, H., Spinhoven, P., Assendelft, W., de Waal, M., Ader. A., van Balkom, A. (2014). Effectiveness of collaborative stepped care for anxiety disorders in primary care: A pragmatic cluster randomised controlled trial. *Psychotherapy and Psychosomatics, 83*(1), 37-44.

Price, D., Beck, A., Nimmer, C., & Bensen, S. (2000). The treatment of anxiety disorders in a primary care HMO setting. *The Psychiatric Quarterly, 71(*1), 31-45.

Rollman, B.L., Belnap, B.H., Mazumdar, S., Houck, P.R., Zhu, F., Gardner, W., . . . Shear, M.K. (2005). A randomized trial to improve the quality of treatment for panic and generalized anxiety disorders in primary care. *Archives of General Psychiatry, 62*(12), 1332-1341.

Collaborative primary care for depression among adults

Adler, D.A., Bungay, K.M., Wilson, I.B., Pei, Y., Supran, S., Peckham, E., . . . Rogers, W.H. (2004). The impact of a pharmacist intervention on 6-month outcomes in depressed primary care patients. *General Hospital Psychiatry, 26*(3), 199-209.

Aragones, E., Lluis, P.J., Caballero, A., Lopez-Cortacans, G., Casaus, P., Maria, H. J., . . . Folch, S. (2012). Effectiveness of a multi-component programme for managing depression in primary care: A cluster randomized trial. The INDI project. *Journal of Affective Disorders, 142*(1-3)*, 297-305.

Berghöfer, A., Hartwich, A., Bauer, M., Unützer, J., Willich, S.N., & Pfennig, A. (2012). Efficacy of a systematic depression management program in high utilizers of primary care: A randomized trial. *BMC Health Services Research, 12*(298).

Capoccia, K.L., Boudreau, D.M., Blough, D.K., Ellsworth, A.J., Clark, D.R., Stevens, N.G., . . . Sullivan, S.D. (2004). Randomized trial of pharmacist interventions to improve depression care and outcomes in primary care. *American Journal of Health-System Pharmacy, 61*(4), 364-372.

Datto, C.J., Thompson, R., Horowitz, D., Disbot, M., & Oslin, D.W. (2003). The pilot study of a telephone disease management program for depression. *General Hospital Psychiatry, 25*(3).

Dietrich, A.J., Oxman, T.E., Williams, J.J. W., Schulberg, H.C., Bruce, M.L., Lee, P.W., . . . Nutting, P.A. (2004). Re-engineering systems for the treatment of depression in primary care: Cluster randomised controlled trial. *BMJ: British Medical Journal, 329*(7466), 602.

Dobscha, S.K., Corson, K., Hickam, D.H., Perrin, N.A., Kraemer, D.F., & Gerrity, M.S. (2006) Depression decision support in primary care: A cluster randomized trial. *Annals of Internal Medicine, 145*(7), 477-487.

Finley, P.R., Rens, H.R., Pont, J.T., Gess, S.L., Louie, C., Bull, S.A., . . . Bero, L.A. (2003). Impact of a collaborative care model on depression in a primary care setting: A randomized controlled trial. *Pharmacotherapy, 23*(9), 1175-1185.

Gensichen, J., von Korff, M., Peitz, M., Muth, C., Beyer, M., Güthlin, C., . . . Gerlach, F.M. (2009). Case management for depression by health care assistants in small primary care practices: a cluster randomized trial. *Annals of Internal Medicine, 151*(6), 369-378.

Hedrick, S.C., Chaney, E.F., Felker, B., Liu, C.-F., Hasenberg, N., Heagerty, P., . . . Katon, W. (2003). Effectiveness of collaborative care depression treatment in veterans' affairs primary care. *Journal of General Internal Medicine, 18*(1), 9-16.

Katon, W., Robinson, P., Von Korff M., Lin, E., Bush, T., Ludman, E., . . . Walker, E. (1996). A multi-faceted intervention to improve treatment of depression in primary care. *Archives of General Psychiatry, 53*(10), 924-932.

Katon, W., Von Korff M., Lin, E., Simon, G., Walker, E., Unutzer, J., . . . Ludman, E. (1999). Stepped collaborative care for primary care patients with persistent symptoms of depression: a randomized trial. *Archives of General Psychiatry, 56*(12), 1109-15.

Katzelnick, D.J., Simon, G.E., Pearson, S.D., Manning, W.G., Helstad, C.P., Henk, H.J., . . . Kobak, K.A. (2000). Randomized trial of a depression management program in high utilizers of medical care. *Archives of Family Medicine, 9*(4), 345-351.

Klinkman, M.S., Bauroth, S., Fedewa, S., Kerber, K., Kuebler, J., Adman, T., & Sen, A. (2010). Long-term clinical outcomes of care management for chronically depressed primary care patients: A report from the depression in primary care project. *Annals of Family Medicine, 8*(5), 387-396.

Landis, S.E., Gaynes, B.N., Morrissey, J.P., Vinson, N., Ellis, A.R., & Domino, M.E. (2007). Generalist care managers for the treatment of depressed Medicaid patients in North Carolina: A pilot study. *BMC Family Practice, 8*(1), 7-11.

Lin, E.H., VonKorff, M., Russo, J., Katon, W., Simon, G.E., Unützer, J., . . . Ludman, E. (2000). Can depression treatment in primary care reduce disability? A stepped care approach. *Archives of Family Medicine, 9*(10), 1052-1058.

Menchetti, M., Sighinolfi, C., Di Michele, V., Peloso, P., Nespeca, C., Bandieri, P.V., . . . Berardi, D. (2013). Effectiveness of collaborative care for depression in Italy. A randomized controlled trial. *General Hospital Psychiatry, 35*(6), 579-586.

Richards, D.A., Lovell, K., Gilbody, S., Gask, L., Torgerson, D., Barkham, M., . . . Richardson, R. (2008). Collaborative care for depression in UK primary care: A randomized controlled trial. *Psychological Medicine, 38*(2), 279-287.

Richards, D.A., Hill, J.J., Gask, L., Lovell, K., Chew-Graham, C., Bower, P., . . . Barkham, M. (2013). Clinical effectiveness of collaborative care for depression in UK primary care (CADET): Cluster randomised controlled trial. *BMJ Clinical Research Ed, 347*.

Rost, K., Nutting, P., Smith, J., Werner, J., & Duan, N. (2001). Improving depression outcomes in community primary care practice. A randomized trial of the QuEST Intervention. *Journal of General Internal Medicine, 16*(3), 143-149.

Schoenbaum, M., Unutzer, J., Sherbourne, C., Duan, N., Rubenstein, L. V., Miranda, J., . . . Wells, K. (2001). Cost-effectiveness of practice-initiated quality improvement for depression: results of a randomized controlled trial. *Jama : the Journal of the American Medical Association, 286*(11), 1325-30.

Shippee, N.D., Shah, N.D., Angstman, K.B., DeJesus, R.S., Wilkinson, J.M., Bruce, S.M., & Williams, M.D. (2013). Impact of collaborative care for depression on clinical, functional, and work outcomes: A practice-based evaluation. *The Journal of Ambulatory Care Management, 36*(1), 13-23

Simon, G.E., VonKorff, M., Rutter, C., & Wagner, E. (2000). Randomised trial of monitoring, feedback, and management of care by telephone to improve treatment of depression in primary care. *BMJ, 320*(7234), 550-554.

Simon, G.E., Ludman, E.J., & Rutter, C.M. (2009). Incremental benefit and cost of telephone care management and telephone psychotherapy for depression in primary care. *Archives of General Psychiatry, 66*(10), 1081-9.

Smit, A., Kluiter, H., Conradi, H.J., van der Meer, K., Tiemens, B.G., Jenner, J.A., . . . Ormel, J. (2006). Short-term effects of enhanced treatment for depression in primary care: Results from a randomized controlled trial. *Psychological Medicine, 36*(1), 15-26.

Swindle, R.W., Rao, J.K., Helmy, A., Plue, L., Zhou, X. H., Eckert, G.J., & Weinberger, M. (2003). Integrating clinical nurse specialists into the treatment of primary care patients with depression. *International Journal of Psychiatry in Medicine, 33*(1), 17-37.

Uebelacker, L.A., Marootian, B.A., Tigue, P., Haggarty, R., Primack, J.M., & Miller, I.W. (2011). Telephone depression care management for Latino Medicaid health plan members: A pilot randomized controlled trial. *The Journal of Nervous and Mental Disease, 199*(9), 678-683.

Wells, K.B., Sherbourne, C., Schoenbaum, M., Duan, N., Meredith, L., Unützer, J., . . . Rubenstein, L.V. (2000). Impact of disseminating quality improvement programs for depression in managed primary care: a randomized controlled trial. *JAMA, 283*(2), 212-220.

Collaborative primary care for depression among older adults

Blanchard, M.R., Waterreus, A., & Mann, A.H. (1995). The effect of primary care nurse intervention upon older people screened as depressed. *International Journal of Geriatric Psychiatry, 10*(4), 289-298.

Bruce, M.L., Ten, H.T.R., Reynolds, C.F., Katz, I.I., Schulberg, H.C., Mulsant, B.H., . . . Alexopoulos, G.S. (2004). Reducing suicidal ideation and depressive symptoms in depressed older primary care patients: A randomized controlled trial. *JAMA, 291*(9), 1081-1091.

Chew-Graham, C.A., Lovell, K., Roberts, C., Baldwin, R., Morley, M., Burns, A., . . . Burroughs, H. (2007). A randomised controlled trial to test the feasibility of a collaborative care model for the management of depression in older people. *The British Journal of General Practice: The Journal of the Royal College of General Practitioners, 57*(538), 364-370.

Gallo, J.J., Bogner, H.R., Morales, K.H., Post, E.P., Lin, J.Y., & Bruce, M.L. (2007). The effect of a primary care practice-based depression intervention on mortality in older adults: a randomized trial. *Annals of Internal Medicine, 146*(10), 689-98.

McCusker, J., Sewitch, M., Cole, M., Yaffe, M., Cappeliez, P., Dawes, M., . . . Latimer, E. (2008). Project Direct: Pilot study of a collaborative intervention for depressed seniors. *Canadian Journal of Community Mental Health, 27*(2), 201-218.

Unützer, J., Katon, W., Callahan, C.M., Williams, J.W., Hunkeler, E., Harpole, L., . . . Lin, E.H.B. (2002). Collaborative care management of late-life depression in the primary care setting: A randomized controlled trial. *Journal- American Medical Association, 288,* 2836-2845.

Unützer, J., Tang, L., Oishi, S., Katon, W., Williams, J. W., Hunkeler, E., . . . Langston, C. (2006). Reducing suicidal ideation in depressed older primary care patients. *Journal of the American Geriatrics Society, 54*(10), 1550-1556.

Collaborative primary care for depression among adults with comorbid medical conditions

Bogner, H.R., de Vries, H.F., Kaye, E.M., & Morales, K.H. (2013). Pilot trial of a licensed practical nurse intervention for hypertension and depression. *Family Medicine, 45*(5), 323-329.

Coventry, P., Lovell, K., Dickens, C., Bower, P., Chew-Graham, C., McElvenny, D., . . . Gask, L. (2015). Integrated primary care for patients with mental and physical multimorbidity: cluster randomised controlled trial of collaborative care for patients with depression comorbid with diabetes or cardiovascular disease. BMJ, *350,* h638.

Davidson, K.W., Rieckmann, N., Clemow, L., Schwartz, J.E., Shimbo, D., . . . Burg, M. M. (2010). Enhanced depression care for patients with acute coronary syndrome and persistent depressive symptoms: Coronary psychosocial evaluation studies randomized controlled trial. *Archives of Internal Medicine, 170*(7), 600-608.

Davidson, K.W., Bigger, J.T., Burg, M.M., Duer-Hefele, J., Medina, V., Newman, J.D., . . . Vaccarino, V. (2013). Centralized, stepped, patient preference-based treatment for patients with post-acute coronary syndrome depression: CODIACS vanguard randomized controlled trial. *JAMA Internal Medicine, 173*(11), 997-1004.

Ell, K., Katon, W., Xie, B., Lee, P.J., Kapetanovic, S., Guterman, J., & Chou, C.P. (2010). Collaborative care management of major depression among low-income, predominantly Hispanic subjects with diabetes: A randomized controlled trial. *Diabetes Care, 33*(4), 706-713.

Katon, W., Russo, J., Lin, E. H., Schmittdiel, J., Ciechanowski, P., Ludman, E., . . . Von Korff, M. (2012). Cost-effectiveness of a multicondition collaborative care intervention: a randomized controlled trial. *Archives of General Psychiatry, 69*(5), 506-514.

Katon, W.J., Von Korff, M., Lin, E.H., Simon, G., Ludman, E., Russo, J., . . . Bush, T. (2004). The Pathways Study: A randomized trial of collaborative care in patients with diabetes and depression. *Archives of General Psychiatry, 61*(10), 1042-1049.

Katon, W.J., Lin, E.H., Von, K.M., Ciechanowski, P., Ludman, E.J., Young, B., . . . McCulloch, D. (2010). Collaborative care for patients with depression and chronic illnesses. *The New England Journal of Medicine, 363*(27), 2611-2620.

Morgan, M.A.J., Coates, M.J., Dunbar, J.A., Schlicht, K., Reddy, P., & Fuller, J. (2013). The TrueBlue model of collaborative care using practice nurses as case managers for depression alongside diabetes or heart disease: A randomised trial. *BMJ Open, 3*(1).

Rollman, B.L., Belnap, B.H., LeMenager, M.S., Mazumdar, S., Houck, P.R., Counihan, P.J., . . . Reynolds, C.F. (2009). Telephone-delivered collaborative care for treating post-CABG depression: A randomized controlled trial. *JAMA : The Journal of the American Medical Association, 302*(19), 2095-2103.

Simon, G.E., Katon, W.J., Lin, E.H., Rutter, C., Manning, W.G., Von, K.M., . . . Young, B. A. (2007). Cost-effectiveness of systematic depression treatment among people with diabetes mellitus. *Archives of General Psychiatry, 64*(1), 65-72.

Vera, M., Perez-Pedrogo, C., Huertas, S.E., Reyes-Rabanillo, M.L., Juarbe, D., Huertas, A., . . . Chaplin, W. (2010). Collaborative care for depressed patients with chronic medical conditions: A randomized trial in Puerto Rico. *Psychiatric Services, 61*(2), 144-150.

Williams, L.S., Kroenke, K., Bakas, T., Plue, L.D., Brizendine, E., Tu, W., & Hendrie, H. (2007). Care management of poststroke depression: A randomized, controlled trial. *Stroke, 38*(3), 998-1003.

Wu, B., Jin, H., Vidyanti, I., Lee, P.J., Ell, K., & Wu, S. (2014). Collaborative depression care among Latino patients in diabetes disease management, Los Angeles, 2011-2013. *Preventing Chronic Disease, 11,* E148.

Collaborative primary care for depression among older adult with comorbid medical conditions

Bogner, H.R., & de Vries, H.F. (2008). Integration of depression and hypertension treatment: A pilot, randomized controlled trial. *Annals of Family Medicine, 6*(4), 295-301.

Bogner, H.R., & de Vries, H.F. (2010). Integrating type 2 diabetes mellitus and depression treatment among African Americans a randomized controlled pilot trial. *The Diabetes Educator, 36*(2), 284-292.

Williams, J.W.J., Katon, W., Lin, E.H., Nöel, P.H., Worchel, J., Cornell, J., . . . IMPACT Investigators. (2004). The effectiveness of depression care management on diabetes-related outcomes in older patients. *Annals of Internal Medicine, 140*(12), 1015-24.

Telemedicine for behavioral health in primary care for posttraumatic stress disorder

Fortney, J.C., Pyne, J.M., Kimbrell, T.A., Hudson, T.J., Robinson, D.E., Schneider, R., . . . Schnurr, P.P. (2015). Telemedicine-based collaborative care for posttraumatic stress disorder: a randomized clinical trial. *Jama Psychiatry, 72*(1), 58-67.

Frueh, B.C., Monnier, J., Yim, E., Grubaugh, A.L., Hamner, M.B., & Knapp, R.G. (2007). A randomized trial of telepsychiatry for post-traumatic stress disorder. *Journal of Telemedicine and Telecare, 13*(3), 142-147.

Morland, L.A., Mackintosh, M.-A., Morland, L.A., Greene, C.J., Rosen, C.S., Rosen, C.S., . . . Frueh, B.C. (2014). Cognitive processing therapy for posttraumatic stress disorder delivered to rural veterans via telemental health: A randomized noninferiority clinical trial. *Journal of Clinical Psychiatry, 75*(5), 470-476.

Morland, L.A., Mackintosh, M.-A., Rosen, C.S., Willis, E., Resick, P., Chard, K., & Frueh, B.C. (2015). Telemedicine versus in-person delivery of cognitive processing therapy for women with posttraumatic stress disorder: A randomized noninferiority trial. *Depression and Anxiety, 32*(11), 811-820.

Telemedicine for behavioral health in primary care for depression

Moreno, F.A., Chong, J., Dumbauld, J., Humke, M., & Byreddy, S. (2012). Use of standard Webcam and internet equipment for telepsychiatry treatment of depression among underserved Hispanics. *Psychiatric Services, 63*(12), 1213-1217.

Nelson, E.L., Barnard, M., & Cain, S. (2003). Treating childhood depression over videoconferencing. *Telemedicine Journal and E-Health, 9*(1), 49-55.

Ruskin, P.E., Silver-Aylaian, M., Kling, M.A., Reed, S.A., Bradham, D.D., Hebel, J.R., . . . Hauser, P. (2004). Treatment outcomes in depression: comparison of remote treatment through telepsychiatry to in-person treatment. *The American Journal of Psychiatry, 161*(8), 1471-1476.

Patient-centered medical homes

Boult, C., Leff, B., Boyd, C.M., Wolff, J.L., Marsteller, J.A., Frick, K.D., . . . Scharfstein, D.O. (2013). A matched-pair cluster-randomized trial of guided care for high-risk older patients. *Journal of General Internal Medicine, 28*(5), 612-621.

Cuellar, A., Helmchen, L.A., Gimm, G., Want, J., Burla, S., Kells, B.J., . . . Nichols, L.M. (2016). The CareFirst patient-centered medical home program: Cost and utilization effects in its first three years. *Journal of General Internal Medicine,* 1-7.

David, G., Gunnarsson, C., Saynisch, P.A., Chawla, R., & Nigam, S. (2014). Do patient-entered medical homes reduce emergency department visits? *Health Services Research,* 5.

Friedberg, M.W., Schneider, E.C., Friedberg, M.W., Schneider, E.C., Friedberg, M.W., Schneider, E.C . . . Volpp, K.G. (2014). Association between participation in a multipayer medical home intervention and changes in quality, utilization, and costs of care. *Journal of the American Medical Association, 311(*8), 815-825.

Friedberg, M.W., Schneider, E.C., Friedberg, M.W., Schneider, E.C., Friedberg, M.W., Schneider, E.C., . . . Volpp, K.G. (2015). Effects of a medical home and shared savings intervention on quality and utilization of care. *Jama Internal Medicine, 175*(8), 1362-1368.

Liss, D.T., Fishman, P.A., Rutter, C.M., Grembowski, D., Ross, T.R., Johnson, E.A., & Reid, R.J. (2013). Outcomes among chronically ill adults in a medical home prototype. *The American Journal of Managed Care, 19*(10), 348-58.

Maeng, D.D., Khan, N., Tomcavage, J., Graf, T.R., Steele, G.D., & Davis, D.E. (2015). Reduced acute inpatient care was largest savings component of geisinger health system's patient-centered medical home. *Health Affairs, 34*(4), 636-644.

Reid, R.J., Johnson, E.A., Hsu, C., Ehrlich, K., Coleman, K., Trescott, C., . . . Fishman, P.A. (2013). Spreading a medical home redesign: effects on emergency department use and hospital admissions. *Annals of Family Medicine, 11*(Suppl 1), S19-S26.

Rosenthal, M.B. (2013). Effect of a multipayer patient-centered medical home on health care utilization and quality: The Rhode Island Chronic Care Sustainability Initiative Pilot Program. *Jama Internal Medicine, 173*(20), 1907.

Rosenthal, M.B., Sinaiko, A.D., Eastman, D., Chapman, B., & Partridge, G. (2015). Impact of the Rochester medical home initiative on primary care practices, quality, utilization, and costs. *Medical Care, 53*(11), 967-73.

Rosenthal, M.B., Alidina, S., Friedberg, M.W., Singer, S.J., Eastman, D., Li, Z., & Schneider, E.C. (2016). A difference-in-difference analysis of changes in quality, utilization and cost following the Colorado multi-payer patient-centered medical home pilot. *Journal of General Internal Medicine, 31*(3), 289-296.

Rosenthal, M.B., Alidina, S., Friedberg, M.W., Singer, S.J., Eastman, D., Li, Z., & Schneider, E.C. (2016B). Impact of the Cincinnati aligning forces for quality multi-payer patient centered medical home pilot on health care quality, utilization, and costs. *Medical Care Research and Review, 73*(5), 532-45.

van Hasselt, M., McCall, N., Keyes, V., Wensky, S.G., & Smith, K.W. (2014). Total cost of care lower among Medicare fee-for service beneficiaries receiving care from patient-centered medical homes. *Health Services Research, 50*(1), 253-272.

Wang, Q.C., Chawla, R., Colombo, C.M., Snyder, R.L., & Nigam, S. (2014). Patient-centered medical home impact on health plan members with diabetes. *Journal of Public Health Management and Practice, 20*(5), E12-E20.

Werner, R.M., Duggan, M., Duey, K., Zhu, J., & Stuart, E.A. (2013). The Patient-centered Medical Home: An Evaluation of a Single Private Payer Demonstration in New Jersey. *Medical Care Philadelphia-, 51*(6), 487-493.

For further information, contact:
John Bauer at 360.586.2783, john.bauer@wsipp.wa.gov