Author (year)	Study setting	Study design	Problem-oriented elements in the EHR//	Population / sample size	Patient-related outcomes assessed	Key findings
Carpenter JD, Gorman PN (2002)	Pharmacy information system and online nursing adult admission assessment	Quality improvement study	Problem list, SOAP+ note or variations	2,221 patient records	Detection of clinically valuable mismatches between medication and problem list; identification of medication errors such as wrong-patient drug orders, omission of treatment, and documentation deficiencies; assessment of the algorithm's ability to improve EMR^ data completeness and patient safety.	11.3% records had medication-problem list mismatches; 90% of mismatches were confirmed true upon manual review; 134 mismatches (52.3%) were deemed potentially clinically valuable; included errors such as wrong-patient drug orders, undocumented new-onset diabetes, and incomplete assessments; algorithm detected issues otherwise not captured by traditional clinical decision support systems.

Hartung DM, Hunt J, Siemienczuk J et al. (2005)	Primary care (community-based primary care clinics)	Cross-sectional study	Problem list	180 patients with a confirmed diagnosis of heart failure due to systolic dysfunction	Proportion of heart failure patients with an active prescription for 1) ACEi**e,** ARB**f,** or hydralazine/long-acting nitrate combination, 2) Beta-blocker, and 3) A combination of a vasodilator and a beta-blocker. Secondary outcomes: association between heart failure problem list entry and: 1) other recommended therapies (spironolactone, diuretics, and digoxin) 2) therapies that are relatively contraindicated in such patients (nonsteroidal anti-inflammatory drugs and nondihydropyridine calcium channel blockers).	Patients with heart failure in their problem list had a lower left ventricular ejection fraction compared to those in which it was omitted (29.5% vs 31.9%; p*=0.025). The likelihood of therapy with an ACEi**e** or ARB**f** was higher in patients who had heart failure listed on their problem list compared to those who did not (92.2% vs 76.7%; p*<0.05). The odds of being prescribed an ACEi**e** (2.67; 95% CI** 1.37 to 5.20), diuretic (2.5; 95% CI** 1.23 to 5.07), digoxin (2.71; 95% CI** 1.49 to 4.96) and spironolactone (2.36; 95% CI** 1.10 to 5.09) were higher among patients who had heart failure on their problem list. The use of vasodilators was also higher (OR?, 3.61; 95% CI** 1.45 to 8.99). There were no differences in the use of beta-blockers,

						nonsteroidal anti-inflammatory and nondihydropyridine calcium channel blockers.
Bordowitz R, Morland K, Reich D (2007)	Two Family Medicine clinics	Quality improvement study	Problem list, SOAP+ note or variations, Episode of care	302 patient records	Documentation of overweight or obesity (BMI$) in the assessment/plan or problem list section of the record; secondary outcome: recorded treatment of overweight/obese patients in the sections described.	302 records were analyzed, 153 before and 149 after EMR^. Obesity documentation: after EMR^ BMI$ calculation, documentation rose from 31 to 71%, with a PR& of 2.30 (95% CI** 1.44–3.68). Obesity treatment: after EMR^ BMI$ calculation, it increased from 35 to 59%, PR& = 1.84 (95% CI** 1.19–2.86). No significant improvement was seen for overweight patients.
Pollak VE, Lorch JA (2007)	Three dialysis units	Prospective cohort study	Problem list, Episode of care	1790 patients with end-stage renal disease treated with chronic maintenance hemodialysis	Anual mortality rates; hospital admission rates; clinical staff needed per 100 patients.	In years 3–9 mortality was lower than in years 1–2 by 23%, 48%, and 34% in the 3 units, and was 37%, 37%, and 35% less than that reported by the national Renal Data

						System. Over the study period, patients in Units A and B were admitted to the hospital 35% to 39% less frequently per year compared to the national rate. In Unit C, hospital admission rate was similar to national data. The number of clinical staff in the study units was 13.79 per 100 patients, a 25.1% reduction compared to the national average.
Dorr DA, Jones SS, Wilcox A (2007)	Primary care	Quality improvement study	Problem list, SOAP+ note or variations	Patients referred with diabetes, hypertension and depression who made at least one outpatient visit in a large healthcare system	HbA1c[] and LDL{} testing and levels	Clinical information systems functions related to best practices increased the odds of appropriate diabetic testing (OR? 1.36, 95% CI** 1.1-1.7). Contextual alerts increased odds of LDL{} testing (OR? 1.8, 95% CI** 1.2, 2.6). Higher use of best practice functions were associated with a non-significant decrease in HbA1c[]. No functions were related to changes in LDL{} levels.

Roman AC (2009)	Primary care (an outpatient center from a healthcare insurance company)	Non-randomized controlled trial	Problem list, SOAP+ note or variations, Episode of care	4,193 patients (intervention group, n=616; control group, n=3,577)	1. Number of health events per patient per year: laboratory tests, specialist consultations, and hospital procedures. 2. Average cost per patient per year. 3. Average cost per health event.	1. Intervention group: 22.00 vs. control group: 29.28 events per patient/year 2. Average cost: intervention group: R$611.51 vs. control group: R$1,130.34 3. Average cost per health event: intervention group: R$19.85 vs. control group: R$25.96 p* < 0.001 for the three outcomes
Poon EG, Wright A, Simon SR et al. (2010)	Primary care	Cross-sectional study	Problem list, SOAP+ note or variations, episode of care	507 primary care providers	Performance on HEDIS<>: diabetes care; women's health; depression treatment; cancer prevention; well-child care; asthma management.	No significant improvement in HEDIS<> scores was found when comparing EHR// users vs. non-users overall. Significant positive associations were found between specific EHR// features (especially problem list, visit notes, and radiology result viewing) and certain quality measures in women's health and cancer prevention. Improvements in these groups ranged from 3.3% to 9.6% compared to non-users.

Jolly S, Navaneethan S, Schold J et al. (2011)	Tertiary care center clinic	Retrospective cohort study	Problem list	8,711 patients with CKD**a** and diabetes	Documentation of CKD**a** on the problem list; quality-of-care: prescription of ACEi**e** or ARB**f**s; measurement of urine protein, parathyroid hormone and phosphorus levels	11.5% of diabetic CKD**a** patients had CKD**a** documented in their EHR// problem list. They were more likely to receive CKD**a**-related care: higher ACEi**e**/ARB**f** prescription; urine protein, parathyroid hormone and phosphorus measurements more frequently performed.
Jolly SE, Navaneethan SD, Schold JD et al. (2014)	Tertiary care center clinic	Retrospective cohort study	Problem list	25,742 patients with CKD**a** and at least one year of follow-up	Nephrology visit; prescribed medications: ACE**e**/ARB**f**, statin and metformin use; blood tests: parathyroid hormone, vitamin D, or phosphorus level, and any urine test to check for proteinuria within 12 months of entry into the CKD**a** registry; development of end stage renal disease; all-cause mortality.	11% of the CKD**a** patients had it documented in the EHR// problem list. The usage of the problem list was associated with demographic factors and disease severity. Patients with CKD**a** in the problem list had more nephrology visits, ACE**e**/ARB**f** and statin prescriptions, recommended labs measured and less inappropriate use of metformin among diabetics. Nephrology visits went up after EHR// recognition in the problem list (to 21.7%) while

						they decreased among non-recognized patients (to 10.1%) and had increased post-CKD**a** recognition of specific processes of care. There was no significant association between CKD**a** in the problem list and risk of death or end-stage renal disease.
Parikh N, Jandorf L, Potack J et al. (2011)	Academic general medicine clinic	Retrospective cohort study	Problem list	58 patients with adenomatous polyps requiring repeat colonoscopy	Documented contact with the gastroenterology office to schedule the exame; actual completion of repeat colonoscopy.	Repeat colonoscopy coordination occurred in 46.5%of patients; among them, 81.5% (22/27) completed the exame. Patient factors predicting coordination included: having insurance at follow-up (p*=0.011); having a Primary care physician at follow-up (p*=0.011); having >1 comorbidity (p*=0.002); number and size of polyps found (p*=0.034 and p*=0.020, respectively). Systems factors associated

						with higher coordination included: Primary care physician referral for screening colonoscopy (p*=0.004); inclusion of screening information in the EMR^ “Problem List” (p*=0.016); Gastroenterology follow-up recommendations in colonoscopy reports (p*=0.026).
Raiszadeh F, Batisti J, Dekhtyar J et al. (2012)	Tertiary academic medical center	Retrospective cohort study	Problem list	22,857 obese adults	Mortality rates with a two-year follow-up; presence of obesity in the problem list of obese patients; factors associated with underreporting.	Patients with correctly reported obesity demonstrated decreased mortality (6.4% CI** 5.6-7.3 vs. 11.4% CI** 10.9-12). Presence of obesity in the problem list: only 18.4% of the study population. There was significant variation in rates of correct diagnosis among subgroups. A linear correlation exists between severity of obesity and correct diagnosis (53.38% of patients with BMI$>45 vs. 7.89% with BMI$ 30-35).

Samal L, Linder JA, Bates DW et al. (2014)	Primary care	Cross-sectional study	Problem list	3,149 patients with stage 3 or 4 CKD**a**	Serum estimated glomerular filtration rate testing (test during the year); urine protein or albumin testing (one of the tests during the year); ACEi**e** or ARB**f** prescription; mean systolic blood pressure; blood pressure control, defined as <130/80 mmHg**b** or <140/90 mmHg**b**.	488 patients (16%) had CKD**a** on the problem list. An additional 7% with laboratory evidence of stage 3 or 4 CKD**a** had one of the other renal diagnoses on the problem list. Problem list documentation was more likely in patients with lower estimated glomerular fraction rates and among subgroups. 97% of patients with CKD**a** documented on the problem list received serum estimated glomerular filtration rate testing, compared to 94% without documentation (p*=0.02); 47% of patients with CKD**a** documentation underwent urine protein or albumin testing, versus 40% without documentation (p*=0.04); no significant association was found between CKD**a** documentation and drug prescription, mean systolic blood pressure or blood pressure control.

Maloney FL, Elfiky A, Wright A (2014)	Hospital (specialty center)	Cross-sectional study	Problem list	4,068 breast cancer women (2,030 for whom data was analyzed for all 5 year follow-up)	Five year annual surveillance mammogram or MRI**n** obtained beginning 18 months after breast cancer diagnosis.	During each 1-year post-therapy surveillance period, an average of 75.3% women received surveillance imaging. Among the 2,030 for whom data was analyzed for all 5 years, 4.7% had no annual surveillance imaging, 7.9% had 1, 6.3% had 2, 7.3% had 3, 18.4% had 4, and 55.4% had all 5. The problem list documentation of breast cancer was significantly associated with surveillance imaging (p*=0.02). Compared to patients who had no problem list documentation of breast cancer, those who had it at any time during the study period were more likely to have surveillance imaging for all five years (OR? 1.40; 95% CI** 1.05-1.86).
Abughali N, Maxwell JR, Kamath AS et al. (2014)	Pediatric infectious diseases service	Quality improvement study	Problem list, EMR^ reminders	193 infants born to mothers with HCV**c**	Identification of at-risk infants (proportion of infants flagged in the EMR^ as HCV**c**-exposed); appropriate HCV**c** testing; new HCV**c**	Identification of at-risk infants increased from 53% to 71% post-intervention (p*= 0.014). Appropriate testing increased from 8% (10/121) to 50% (36/72) (p*< 0.0001).

					diagnoses; follow-up adherence.	Five new cases of HCV**c** were identified due to improved testing, three of these were from the pre-intervention period. EMR^ communication with Primary care physicians led to testing in 36% of previously untested children.
Braschi C, Lee K, Shah B et al. (2014)	Urban academic medical center	Retrospective cohort study	Problem list, Episode of care	77 asymptomatic African American and Latino patients ≥50 years of low socioeconomic status who had at least 1 advanced adenoma or ≥3 adenomas of any type identified after screening colonoscopy	Completion of 3-year follow-up colonoscopy indicated after first surveillance colonoscopy; existence and timing of appointment after indication of surveillance colonoscopy, among the non-completers of the follow-up.	The pathology found at the time of screening colonoscopy was noted under "Problem List" in the charts of 76.9% of completers but in only 32.8% of non-completers (p*=0.005). Only 13 patients (16.9%) had a record of surveillance colonoscopy completion. Among the non-completers, only 32,8% had a visit and a referral to either a gastroenterologist consult (n=5) or a surveillance colonoscopy (n=16).

Hsiao CJ, Marsteller JA, Simon AE (2014)	Primary care and specialists - national data on ambulatory care	Ecological study	Problem list	1. Receipt of aspirin for ischemic heart disease or cerebrovascular disease n=1761 2. Smoking counseling provided to current smokers during a general medical exam n=3872 3. Blood pressure check during a general medical exam n=5848 4. Controlled blood pressure in patients with hypertension n=10,412 5. Routine urinalysis in general medical exams without a clinical indication (inappropriate) n=577 6. Inappropriate prescribing for elderly patients n=4834 7. Antibiotic prescription for upper respiratory infections when not indicated n=497	Quality of care measures: receipt of aspirin for ischemic heart disease or cerebrovascular disease; smoking counseling provided to current smokers during a general medical exam; blood pressure check during a general medical exam; controlled blood pressure in patients with hypertension; routine urinalysis in general medical exams without a clinical indication (inappropriate); inappropriate prescribing for elderly patients; antibiotic prescription for upper respiratory infections when not indicated.	The study did not find a consistent relationship between EMR^ features and the 7 selected quality measures. Having reminders for guideline-based interventions or screening tests was associated with lower odds of inappropriate urinalysis and of prescription of antibiotics for upper respiratory infections. Having prescription order entry was associated with lower odds of inappropriate prescribing for the elderly and of prescribing antibiotics for upper respiratory infection. However, having a patient problem list was associated with higher odds of inappropriate prescribing for elderly patients. Having EMR^ systems was associated with avoiding some inappropriate care, but

						blood pressure was less likely to be checked.
Mishuris RG, Linder JA, Bates DW et al. (2014)	Primary care	Cross-sectional study	Problem list	46,845.9 adult primary care visits wit EHR//	Blood pressure control; cancer screening: mammography, Pap smear and sigmoidoscopy or colonoscopy; health education for particular conditions; *Influenza* vaccination; adverse drug events.	Higher odds of controlled blood pressure in clinics with electronic problem lists (86% vs. 80%; OR? 1.4, 95% CI** 1.3-1.6). Higher odds of receiving cancer screening if the visit was to a clinic with electronic lab results (15% vs. 10%; OR? 1.5, 95% CI** 1.03-2.2) or notification of acceptable lab ranges (16% vs. 11%; OR? 1.4, 95% CI** 1.03-1.8). In general, the odds of having controlled blood pressure and avoiding adverse drug events were higher at clinics with active clinical decision support compared with those who had disabled it. Lack of association between general clinical decision support use and cancer screening, I*nfluenza*

						vaccination, or health education.
Calderwood AH, Schroy PC, Kluge MA et al. (2016)	Medical center (hospital)	Cross-sectional study	Problem list	891 average-risk patients aged 50 to 75 with colorectal adenomas diagnosed during screening colonoscopy	On-time surveillance colonoscopy; on-time follow-up.	38.3% of patients attended on-time surveillance colonoscopy. In multivariate analysis, having 'adenoma' on the problem list remained a significant predictor of adherence (OR? 1.83, 95% CI** 1.34–2.51).

Baer HJ, Wee CC, Orav EJ et al. (2016)	Primary care	Pragmatic, cluster randomized-controlled trial	Problem list, EMR^ reminders	Phase 1: 62,736 eligible patients had visits (28,919 in the intervention and 33,817 in the control group); phase 2: 36,574 eligible patients with BMI$ >= 25 kg/m2 had visits (15,669 in the intervention and 20,905 in the control group) (23 clinical teams: n=11 intervention group; n=12 control group)	1. Changes in documentation of BMI$ in the EHR//-based tools from the preintervention period to Phase 1 2. Changes in diagnosis and management of overweight and obesity from the preintervention period to Phase 2 3. Compared 6-month (±2 months) and 12-month (±3 months) weight change during Phase 2 for patients with BMI$ ≥ 25 kg/m2 4. Experiences with weight management and discussions about it with their Primary care physicians.	1. Documentation of BMI$ in the EHR// increased from 93 to 98% among patients in the intervention group and from 94 to 98% among patients in the control group (p*= 0.69). 2. Diagnosis of overweight or obesity on the problem list increased from 37 to 71 % among patients in the intervention group, but decreased from 16 to 8 % in the control group (p*< 0.0001). 3. The mean 6-month weight change was -0.5 lb vs. -0.2 lb (intervention vs. control) and the 12-month change was -1.4 vs. -0.9 lb (intervention vs. control) (p*< 0.0001 over time). 4. 590 patients (25%) completed a mailed survey after their primary care visit. 60.7% vs. 53,9% (intervention vs. control) reported that their clinician recommended that they lose weight (p*=0.03), and 17.5 % vs. 13.3% (intervention vs.

						control) said their clinician helped set a specific weight loss goal (p*=0.05). According to final report: There were no significant differences in weight change between the groups. Mean 6-month weight change was -0.25 pounds for the intervention group and -0.14 pounds the control group, and mean 12-month change was -0.94 pounds the intervention group and -0.73 pounds for the control group (p*= 0.47 over time). The mean percent weight change over 12 months was -0.38% in the intervention group and -0.37% in the control group (p*= 0.89 over time.)	

Sha B, Exner K, Kniuksta R et al. (2016)	Emergency department	Quality improvement study	Problem list	2013: 1,117 patients tested for HIV**g** (44,076 patients in the target age group); middle 2015-middle 2016: 6,214 patients tested (32,015 met test criteria)	Number of HIV**g** tests performed; new HIV**g** diagnoses; previously diagnosed cases identified; HIV**g** positivity rate; reasons for declining testing; best practice alert completion rate.	Increased number of HIV**g** tests ordered from 1,117 (2.5% of the target population) per year to 6,214 (19.4% of it) per year. Six acute seroconversions and 14 new chronic infections identified. 22 patients tested positive but were found to have previously known diagnoses. Overall positivity rate was 0.68%. 5.30% declined testing by choice / 46% refused blood draw / 18% stated they were not at risk. The best practice alert was not completed for 67% of the target population.

Sha BE, Kniuksta R, Exner K et al. (2019)	Emergency department	Quality improvement study	Problem list	23,588 patients tested for HIV**g** (137,749 met test criteria)	Number of HIV**g** tests performed; test positivity rate; type of HIV**g** diagnosis; false positives; linkage to care; treatment initiation and viral suppression; loss to follow-up / refusal of care; impact on clinical diagnosis.	1. Before program (2013): 1,117 tests (2.5% of eligible patients; 93/month). During program (2015–2019): 23,588 tests (17.1% of target population). By phase: a)Hard-stop best practice alert: 543/month (peak: 732/month), b)Passive reminder: 222/month, c) Linked to complete blood count: 654/month. 2. 164 positive cases (0.7%). 3. Acute HIV**g**: 18 patients/ new chronic HIV**g**: 51 / previously diagnosed: 95. 4. 21 false-positive results (0.09% of all tests; 11.4% of reactive tests) 5. Acute HIV**g**: 15 linked to care and started ART**h** / 2 declined follow-up / 1 lost follow-up; new chronic HIV**g**: 41 linked to care; previously diagnosed: 45 already in care; 29 successfully re-linked. 6. Acute HIV**g**: 12 achieved viral load <40 copies/mL, 1 reached 40 copies/mL at 12 weeks and 2 had unknown

						outcome / new chronic HIV**g**: 29 achieved undetectable viral load, 1 started ART**h** but not enough time for suppression and 10 referred or lost to follow-up. 7. New chronic HIV**g**: 5 refused follow-up, 2 relocated, 1 died and 2 unreachable / previously diagnosed: 15 not successfully re-linked (declined or unreachable). 8. HIV**g** test results influenced emergency department providers' differential diagnosis and led to 10 hospital admissions for acute HIV**g**.
Jakkidi M, Peikin S, Major K et al. (2017)	Office visits	Cross-sectional study	Problem list	200 patients with a BMI$ > 30	Obesity management (dietary/exercise counselling, referral to an exercise program and bariatric surgery); documentation of hypertension, nonalcoholic fatty liver disease, diabetes mellitus type 2 and hyperlipidemia.	94 patients had obesity listed as a medical problem (47.0%). 75.5% of them had obesity management compared with 30.2% of those who do not have obesity documented in the problem list (p*<0.001). 68.1% of individuals with obesity documented in the problem

						list also have hypertension documented in it compared with 49.1% of those who do not have it (p*=0.007). Other results were not statistically significant.
Antos NJ, Noe J, Brueck N et al. (2017)	Hospital	Quality improvement study	Problem list	Cystic fibrosis patients with pulmonary exacerbation in one institution	Tool usage compliance, average length of hospital stay, recovery of baseline FEV1**i** following pulmonary exacerbation	After completing the transition of the Pulmonary Exacerbation Road Map into the EHR//, the study demonstrated 100% compliance with tool usage. The average length of hospital stay decreased from 12.5 to 9 days(p*< 0.01). 90.6% of patients returned to greater than 90% of their baseline FEV1**i** following pulmonary exacerbation.

Bae J, Hockenberry JM, Rask KJ et al. (2017)	Primary care	Retrospective cohort study	Problem list	34,315 adult patient visits to 1,425 primary care physicians	The provision of health behavior counseling	Patient problem list was present in 41.8% of the records. Around 40% of visits included at least one health behavior counseling service. The following components were associated with increased counseling rates: clinical notes (5.6 pp**j**, p*<0.001), computerized order entry of prescriptions (3.8 pp**j**, p*<0.001), computerized order entry of labs (1.6 pp**j**, p*<0.05), highlighting of abnormal lab results (3.5 pp**j,** p*<0.001). These were associated with decreased rates: E-reminders (−3.9 pp**j**), image viewer (−3.1 pp**j**), lab viewer (−4.7 pp**j**). Patient problem lists had no significant effect when considered alone. The combination of patient problem lists and e-reminders led to an increase in counseling (4.4 pp**j**, p*<0.01).

						The combination of lab viewer with highlighting of abnormal results was associated with a net positive effect. Availability of all EHR// components was linked to a significant increase in counseling. The optimal combination of seven EHR// components (excluding imaging results) increased the probability of counseling by 9.8 pp**j**.
Reschly WJ, Dziegielewski PT (2018)	Postoperative care	Quasi experimental study	SOAP+ note or variations, Episode of care	A retrospective group of 100 and a prospective group of 88 postoperative care in head and neck free flap patients	Length of stay hospitalized after surgery; 30-day readmissions post-discharge; postoperative complications; adherence to postoperative care algorithm (measured only in the prospective group).	Length of stay was reduced in the prospective group using templated notes (7.57 days) compared to the retrospective group with standard notes (10 days), p*= 0.011. 30-day readmissions: 7% in the prospective group vs. 12 % in the retrospective group, p*= 0.44. Postoperative complications: 20% in the prospective group compared to 36% in the retrospective group, p* = 0.14. 85%

						reported using templated notes.
Prater LC, Wickizer T, Bose-Brill S (2019)	Hospice care (academic medical center)	Cross-sectional study	Problem list, SOAP+ note or variations	3,595 patients referred to hospice care	Advance Care Planning note in the Problem list; scanned Advance Directives; verified Do-not-resuscitate Order.	p*<0.05 for age, race, palliative encounter, cancer diagnosis, and death. Older adults (70+) were 44% less likely to have Advance Care Planning note, were 37% less likely to have a scanned Advance Directive and were 42% more likely to have a Do-not-resuscitate Order.
Prater LC, Wickizer T, Bower JK et al. (2019)	Hospice care (academic medical center)	Retrospective cohort study	Problem list	1,185 cancer patients referred to hospice care	Hospital admission in the last 30 days of life; presence and timing of Advance Care Planning documentation (note in problem list, scanned directives, Do-not-resuscitate Order) as influencing variables on admission risk.	12.8% of patients had an Advance Care Planning note before the last 30 days of life, and 5.1% had one before the last 6 months. An Advance Care Planning note in the problem list more than 30 days before death reduced admission odds (OR?=0.71, p*=0.042); having it more than 6 months before death further reduced admission (OR?=0.35, p*<0.001). A verified Do-not-resuscitate Order prior to the last 30 days was associated with fewer

						admissions (OR?=0.30, p*<0.001). Scanned Advance Directives were not associated with reduced admission (OR?=0.81, p*=0.078).
Goss D, Goss J (2019)	Pulmonary subspecialty practice	Pilot implementation study	Problem list, SOAP+ note or variations, Episode of care	Ten COPD**k** patients	Number of COPD**k** exacerbations per patient; number of hospitalizations and readmissions related to COPD**k;** time until next exacerbation.	Approximately 50% of patients reduced exacerbations from 2 to 1 annually. Hospitalizations and readmissions were not significantly reduced, although some patients experienced delayed exacerbations or no further hospitalizations.
Bernstein SL, Weiss J, DeWitt M et al. (2019)	Hospital (inpatient)	Randomised controlled trial	Problem list, EMR^ reminders	254 hospital physicians randomized in two groups (44 hospitalists, 180 internal medicine residents and 30 emergency medicine residents)	Verified smoking cessation after discharge; treatment delivery (tobacco treatment medications and quitline referrals during hospitalization); follow-up care (communication with the Primary care provider about tobacco use for continued treatment).	Tobacco Treatment Delivery - intervention vs. control arms: medication orders: 35% vs. 29% (p*<0.0001); problem list entries ("Tobacco Use Disorder"): 41% vs. 2% (p*< 0.0001); quitline referrals: 30% vs. 0 (p*<0.0001); secure messages to primary care providers: 99% of intervention patients received one. No significant differences were found at 1-,

						12- and 6-month follow-ups for smoking cessation.
Alammari D, Banta JE, Shah H et al. (2021)	Ambulatory healthcare	Cross-sectional study	Problem list	30,787 visits (95% met EHR// meaningful use criteria)	Obesity (BMI$ screening and obesity education); blood pressure screening; tobacco use.	Positive association between EHR// meaningful-use and obesity screening (OR?=3.5, 95% CI** 1.742-6.917); offices having the capability to view lab results, order lab test, and recording the patient problem list were more likely to measure BMI$; offices having the capability to record clinical notes were more likely to give obesity education (OR?=1.9 CI** 1.144-3.267).
Abushamma S, Chen LS, Chen J et al. (2021)	Tertiary center gastroenterology clinic	Quality improvement study	Problem list	Pre-module: n=4,533 (3,959 smokers); post-module: n=4,729 (4,196 smokers)	Smokers on cessation treatment	3% of smokers were on any treatment pre-intervention, whereas 20% afterwards (p*<0.0001). Treatment was in the form of brief advice given (0.8% pre-intervention vs. 12.9% post-intervention, p*<0.0001), additional counseling offered (0.6% pre vs. 33.8% post, p*<0.0001), additional counseling referred (0.6% pre vs 9.1% post,

						p*<0.0001), or medications (non-significant difference).
Rylee TL (2021)	Part one: acute care hospitals and ancillary care; part two: specialty pain care	Part one: cross-sectional study; part two: retrospective cohort study	Problem list	Part one: 12,803 patients with a chronic pain diagnosis; part two: 4,531 patient records	Association between chronic pain documentation in the problem list and receiving access to speacialty pain care	The most common diagnosis was other chronic pain at 69.7%. A migraine diagnosis was associated with decreased odds of having specialty care compared to chronic pain syndrome (OR? 0.35, 95% CI** 0.22-0.56). Having a non-specific diagnosis (codified as other chronic pain) was associated with increased odds of receiving specialty pain care compared to a chronic pain syndrome diagnosis (OR? 1.68, CI** 1.25-2.27). Pain documented on the problem list had 57% increased odds of receiving specialty pain care (OR? 1.57, 95% CI** 1.19- 2.07).

Anderman JH, Colella D, Gore R et al. (2022)	Primary care (academic inner-city primary care network)	Quality improvement study	Problem list	28,729 patients	Percentage of care gaps closed within 30 days. Gaps included completing exams and tests such as breast cancer screening, HbA1c[] testing, diabetic foot exams, referrals for retinal examinations, completion of nephropathy screening or initiation of preventive ACEi**e**/ARB**f** treatment, and cervical cancer screening appointments.	Set used in 78% of encounters; breast cancer screening: 71% ordered vs. 44% (p*<0.001); 32% completed vs. 18% (p*<0.001; HbA1c[] test: 90% ordered vs. 51% (p*<0.001); diabetic foot exam: 33% vs. 12% (p*<0.001); retinal exam referral: 15% vs. 4% (p*<0.001); nephropathy screening/ ACEi**e**/ARB**f** initiation: 35% vs. 5% (p*<0.001); cervical cancer screening referrals: 11% vs. 8% (p*=0.046).
Wright A, Schreiber R, Bates D et al. (2023)	Mixed (inpatient and outpatient)	Randomised controlled trial	Problem list	Physician, physician assistants and nurse practitioners in 4 different sites (288 832 opportunities in the intervention arm)	Problem list completeness for determined chronic diseases; accuracy of clinical decision support-generated suggestions (via manual review); provider adoption/response to alerts (e.g., problem list updates).	Problem list completeness increased significantly in the intervention group compared to control. Manual review showed high precision of clinical decision support suggestions (~89%). There was no difference in quality measurements between groups.

Nada A, Bagwell A (2024)	Neonatal intensive care unit	Quality improvement study	Problem list, Alerts	Newborns with acute kidney disease (n=57 before the alert; n=148 after the alert)	Improvement in acute kidney injury documentation in the problem list; increase in nephrology consultations or referrals.	Increase from 7% to 100% of neonates diagnosed acute kidney injury with the diagnostic in their problem list; no difference in nephrology consultation; increase in referral to newborn renal clinic from 10% to 38,5% (p*=0.005).
Buttafuoco KA, Mokshagundam S, Henricks A et al. (2024)	University medical center	Retrospective cohort study	Problem list, SOAP+ note or variations	372 patients with obesity and endometrial cancer	Obesity on problem list; any obesity intervention completed; weight loss counseling documented in provider notes; obesity intervention tab used; nutrition referral; medical weight loss clinic referral.	Patients with obesity on the problem list were more likely to have completion of any obesity intervention (OR 1.91, 95% CI 1.09-3.35). In the multivariable logistic regressions, the presence of obesity on the problem list was not associated with weight loss. Completion of health maintenance obesity intervention tab in the EMR^ was associated with weight loss (OR? 2.77, 95% CI** 1.11-6.89).

Gonzaga de Andrade Santos TN, Mendonça da Cruz Macieira G, de Oliveira Santos Silva R et al. (2025)	Intensive care unit	Randomised controlled trial	SOAP+ note or variations	150 ICU**I** patients	Length of stay; SOFA**m** score and its change over time; death rate.	Patients in the intervention group had a shorter hospital stay - 7.08 days (+/-4.38) - than those in the control group - 10.7 days (+/-6.32) (p*< 0.0001). The intervention group showed a decrease in SOFA**m** scores (–4.63), whereas the control group showed an increase (+1.88)(p*<0.0001). The intervention group had a 6.58% mortality (5 deaths); the control group, 25.7% (19 deaths) (p*=0.001).
Banerjee ES et al. (2013)	Primary care clinic	Randomized controlled trial	Problem list	843 obese patients	Discussion about obesity in primary care visits	After a 5-month follow-up, obese patients with obesity automatically added into their problem list had obesity addressed more frequently when compared to the control group (14,7% vs. 4,6%, P-value<0.001)

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