Supplement 1

Sample Search Strategy (PubMed)

Mental Health
"Mental Health"[majr] OR "mental health"[tiab] OR "mental illness"[tiab] OR "Anxiety Disorders"[Mesh] OR "Anxiety, Separation"[Mesh] OR "Attention Deficit and Disruptive Behavior Disorders"[Mesh] OR "Depressive Disorder/classification"[Mesh] OR "Depressive Disorder/diagnosis"[Mesh] OR "Substance-Related Disorders/classification"[Mesh] OR "Substance-Related Disorders/diagnosis"[Mesh] OR "Self-Injurious Behavior/classification"[Mesh] OR "Self-Injurious Behavior/diagnosis"[Mesh] OR "anxiety"[tiab] OR "depression"[tiab] OR "attention deficit"[tiab])

Youth
"Child"[Mesh] OR "Adolescent"[Mesh]) OR "Minors"[Mesh] OR "adolescen*"[tiab] OR "teen*"[tiab] OR "youth"[tiab] OR "children"[tiab]

Primary care
Primary Health Care"[Mesh] OR "Adolescent Medicine"[Mesh]) OR "General Practice"[Mesh] OR "Pediatrics"[Mesh] OR "General Practitioners"[Mesh] OR "Physicians, Family"[Mesh] OR "Physicians, Primary Care"[Mesh] OR "primary care"[tiab] OR "pediatric*"[tiab] OR "paediatric*"[tiab]

Screening
"Screen*"[tiab] OR "mass screening"[MeSH:noexp] OR "questionnaires"[Majr] OR "Risk Assessment"[Mesh:noexp]

Key domains are listed above in bold. Domains were joined using the Boolean operator "AND." Due to the high number of search hits, we added the following exclusion terms to the PubMed search, using the Boolean operator "NOT"

EXCLUSIONS
NOT ("developmental disabilities"[MeSH] OR "developmental disabilities"[tiab] OR "autism"[tiab] OR "asthma"[MeSH] OR "asthma"[tiab] OR "obesity"[MeSH Terms] OR "obesity"[tiab] OR "chronic pain"[tiab] OR "cancer"[tiab] OR "cardiac"[tiab] OR "diabetes"[tiab] OR "epilepsy"[tiab] OR "infection"[tiab] OR "oral"[tiab] OR "dental"[tiab] OR "allergy"[tiab] OR "hypertension"[tiab] OR "inflammatory bowel disease"[tiab] OR "congenital"[tiab] OR "arthritis"[tiab] OR "musculoskeletal"[tiab])

Table S1. Setting, Instruments, Scoring, Follow-Up, and Clinical Impact

Lead author, year, and citation[a]	Setting and population	Instrument	Who scores and training in scoring	Follow-up to screen and training or assistance with follow-up	Impact on visit	Impact on referrals and utilization
Applegate 2003 [39]	Residents (4); 52 patients age 6–16 coming for WCC	PSC with or without parent handout	Residents taught "how to use and score." Taught about importance of intervention.	Resident decides how to use results and handouts	Increased behavioral discussions but not related to PSC score; authors speculated residents did not use screener to identify children needing more intervention.	No increase in behavioral interventions from baseline
Asarnow 2005[50]; Asarnow 2009 [76]; Wells 2012 [77]	4,002 youth 13–21 screened, 418 enrolled and then randomized, range of primary care settings	Set of items for depression/ dysthymia from CIDI and CES-D	Study staff (enrolled patients randomized to usual care or QI intervention for depression)	In QI condition care manager of PhD level clinician supported PCP with evaluation, patient education, treatment, referral; usual care PCPs trained on evaluation and treatment	No difference in satisfaction with mental health care between QI and usual care group	QI group patients had fewer depression symptoms at follow-up
Ballard 2012[63]; Horowitz 2010[66]	Convenience sample of 156 ED ages 10–21	15 or 30 item version of Suicidal Ideation Questionnaire	Not stated	On-site ED psychiatric staff evaluate positive results while patient waits for ED provider	Those requiring psychiatric evaluation did not have longer visits	Not stated
Berger-Jenkins 2012[40]	229 children 5–12 in primary care	Initial screening question about concerns; if positive get PSC-17	Nurse scores and puts on chart	Providers introduced to PSC and rationale for scoring; encouraged to use own judgment about results; on-site MH consultant 1 day/week	Increase in chart notes re: MH concerns but no change in proportion with MH diagnosis	Referrals decreased
Briggs 2012[58]	3,169 children 6–36 months in primary care	ASQ-SE given a 6-month intervals	Psychologist scores	Positive screens given to co-located psychologist, who consults with PCP about treatment	Not stated	MH intervention reduced subsequent scores
[b]Chisolm 2008[52]	1,021 youth 11–20 in primary care	Health eTouch behavioral risk screen (computerized)	Scored electronically, positive results and individual items given to provider	No discussion of provider training or assistance	Not stated	Not applicable

Lead author, year, and citation[a]	Setting and population	Instrument	Who scores and training in scoring	Follow-up to screen and training or assistance with follow-up	Impact on visit	Impact on referrals and utilization
[b]Chisolm 2009[10]	996 youth 11–20 in primary care	Health eTouch behavioral risk screen (computerized)	Scored electronically, positive results and individual items given to provider (randomized to get immediate versus delayed)	No discussion of provider training or assistance	Not stated	Increased use of medical and MH services over next 6 months; positive screen increased depression care (vs. negative screen) but substance care unrelated to screen result
[b]Stevens 2008[48]	878 youth 11–20 in primary care	Health eTouch behavioral risk screen (computerized)	Scored electronically, positive results and individual items given to provider (randomized to get immediate versus delayed). Increased cut-off during study when providers "overwhelmed."	No discussion of provider training	Increased provider recognition of behavioral and substance concerns in immediate vs. delayed results, but even with immediate feedback 45% of youth with concerns missed by PCP's	Not applicable
[b]Gardner 2010[53]	1547 youth 11–20 in primary care	Health eTouch behavioral risk screen; this paper focuses on suicide screen, PHQ-A	Scored electronically, positive results and individual items given to provider (usually before visit) and suicide prevention team.	PCP not trained; had option of discussing results with family or referring to on-site social worker and suicide prevention team; assistance with scheduling follow-up MH visit	Social workers spoke to 98% of those with SI; PCP role not discussed	65% of those referred for MH follow-up received it in next 6 months
Diamond 2010[72]	415 youth 12–21 in primary care	Behavioral Health Screen	Scored electronically, PCP receives printout with scaled scores by domain	Those with behavioral need "referred appropriately;" no discussion of training (though instrument designed to "focus clinical conversations about risk."	Providers thought BHS useful for facilitating visit, planning conduct of visit, guiding follow-up questions	Not applicable

Lead author, year, and citation[a]	Setting and population	Instrument	Who scores and training in scoring	Follow-up to screen and training or assistance with follow-up	Impact on visit	Impact on referrals and utilization
Fein 2010[59]	857 youth 14–18 in ED	Behavioral Health Screen-ED	Scored electronically, ED provider receives printout with scaled scores by domain	Clinical staff followed "routine care" which could include SW or psychiatric consult; training not discussed	Increased identification of patients with psychiatric illness	Increased ED-based SW and psychiatric assessments
Pailler 2009[45, 60]	Pilot: Youth 14–18 in ED, number not stated Interviews pre-pilot: 60 non-acute ED patients 12–18 and parents	Behavioral Health Screen-ED	Scored electronically, ED provider receives printout with scaled scores	Nurses and ED technicians received on-site training; other ED staff made aware. Providers instructed to "follow their routine care" of positive screens; consultation available. Database of referral resources.	Not discussed.	Mentions comparison of patient outcomes and referrals before and after implementation but does not provide data.
Gall 2000[54]	383 youth 13–18 in school-based health center	PSC-Y plus additional questions (including, "Do you have emotional or behavioral problems for which you want help? ")	Score recorded in medical record; who scores not stated.	No mention of training. Students with positive screen who asked for referral received one. Agreement with MCO to provide referrals.	Not discussed.	Positive score strongly associated with referral (81% of positives versus 8% of negatives); referral related to later decreased absences and tardiness
Garrison 1992[65]	1,378 well child visits to urban primary care clinic and 3 private practices; 327 cases where parent raised psychosocial concern	1-page bilingual survey with demographics, parent concerns, indication of desire to talk to PCP	Placed in chart after parent completes it; evidently even if parent did not wish to discuss with PCP	No mention of training; in urban setting more often asked patients to return for further discussion; in private practice gave reassurance and guidance.	Providers did not address concern in 35% of visits where parent had concern and wanted to talk about it. Parents with fewer concerns more likely to have them discussed.	Medicaid families more likely to be referred.

Lead author, year, and citation[a]	Setting and population	Instrument	Who scores and training in scoring	Follow-up to screen and training or assistance with follow-up	Impact on visit	Impact on referrals and utilization
Gruttadero 2011[38]	554 family respondents of web-based survey of caregivers of children and youth with mental illness	Survey of experiences with primary care providers	Not applicable	Not applicable	Not applicable	Not applicable
Hacker 2006[11]	1,668 youth 4yrs/11mos to 19 years at well visits in primary care	PSC or PSC-Y plus additional questions about parent concerns	Provider scores once visit has begun	Providers instructed to discuss results with family; make handoff to co-located SW in person. Children who score positive and not already in care, and those negative but parent has concern, are referred, but provider can refer anyone if desired.	Not described	Number of MH referrals doubled from year prior to screening; of those referred, 41% had positive PSC
Hacker 2009[12]	1,033 youth 4yrs/11mos to 19 years at well visits in primary care who had more than one screen over time	PSC or PSC-Y plus additional questions about parent concerns	Provider scores once visit has begun	Same as Hacker 2006	Not described	Referral of youth at index visit associated with drop in PSC score at follow-up but not related to whether referral appointment kept
Hartung 2010[55]	328 children 3–12 in primary care	Primary Care MH Screener	Instrument not scored—PCP to review items Need impairment to justify referral; no strict cut-off score	PCPs trained: - items matching particular symptom clusters - look for often or very often items - criteria for asking follow-up questions - general probes asking for examples and related functional problems - referral list	Not described (paper focuses on psychometrics)	Not described (paper focuses on psychometrics)

Lead author, year, and citation[a]	Setting and population	Instrument	Who scores and training in scoring	Follow-up to screen and training or assistance with follow-up	Impact on visit	Impact on referrals and utilization
Hayutin 2009[51]	174 children ages 4–16 in primary care and pediatric GI clinic	PSC	Parents randomized (according to their provider) to no screen, to score screen themselves, or to have nurse or medical assistant score	Providers told that purpose of study was to evaluate waiting-room intervention to increase communication about emotional and behavioral problems; providers received 5-minute training and written instructions on interpretation of PSC	Screening increased discussion of psychosocial issues among those with higher scores, regardless of who scores; staff scoring associated with more physician initiation of discussion; parent scoring associated with higher ratings of "enough" discussion	No impact of screening on referrals (rate very low)
Horwitz 2008[57]	376 families of children up to age 8 scheduled for well care in primary care	"CHADIS" system of multiple (23)screeners on-line plus asking for ranked concerns	Computer scored	30-minute session on epidemiology and diagnosis. System includes on-line materials for providers and families.	Too time consuming for provider, better for assistant; not always aware that screening completed; providers did not find on-line material useful.	Not applicable
Husky 2011[56]	483 youth 13–17 coming for well care in primary care	DPS-8	Computer-generated summary of disorder and total scores	No information about training or preparation of providers, but provider review "privately with adolescent" is recognized as second stage of screen.	Not described.	Screening regardless of outcome resulted in more MH and pediatric follow-up, but positive screen moreso; doubled proportion thought to need care
Jee 2011[41]	195 youth 11–17 in foster care	SDQ	Not formally scored until after visit	Providers review SDQ during visit; training not discussed; SW available to make referrals	Doubled detection rate of social-emotional problems from 27 to 54%	Not known
Jellinek 1999[78] Wasserman 1999[79]	21,065 youth ages 4–15 in primary care practice-based research networks	PSC	Not stated who scores	Training video for practices but details not provided	Not stated, providers did not have access to PSC results	Not stated

Lead author, year, and citation[a]	Setting and population	Instrument	Who scores and training in scoring	Follow-up to screen and training or assistance with follow-up	Impact on visit	Impact on referrals and utilization
Kelleher 1997[80]	10,250 youth ages 4–15 in primary care practice-based research networks	PSC	Not stated who scores	Training video for practices but details not provided	Not stated and providers did not have access to PSC, but in independent report providers agreed with positive PSC 54% of the time. Agreement more likely if provider identified the patient as their own.	Not stated
John 2007[61]	124 youth 8–18 selected by nursing students in a variety of ambulatory pediatric settings	Short Mood and Feeling Questionnaire and four additional questions on PDA system (PDA-DSS)	Not stated if PDA scores instrument	Discussion suggests need for additional training on how to share results with patients and develop therapeutic relationship; PDA-DSS does include some teaching and "counseling interventions"	Not stated	Not stated
King 2009[67]	295 youth ages 13–17 at ED	Multiple instruments for depression, SI, alcohol abuse as initial screen and 4 others for second stage	Screening administered and scored by research staff and informs ED physician	Paper focuses on validity and utility versus prior diagnosis	Not applicable	54% of those positive for SI had come for other reasons (MH and medical); 56 of those positive already in treatment
King 2012[68]	245 youth ages 13–17 at ED	Multiple instruments for depression, SI, alcohol abuse	Screening administered and scored by research staff	Paper focuses on whether telling youth that a staff member will review the results influences answers	Not applicable	Not applicable
Kuhlthau 2011[9]	Claims data for Massachusetts Medicaid pre- and postmandatory MH screening in primary care	Not specified	Not specified	Not specified	Not specified	25% increase in number of children with behavioral health evaluations

Lead author, year, and citation[a]	Setting and population	Instrument	Who scores and training in scoring	Follow-up to screen and training or assistance with follow-up	Impact on visit	Impact on referrals and utilization
Metz 1976[62]	983 youth 4–16 in primary care	"Multiphasic" visit addressing several aspects of psychosocial and developmental risk	All instruments administered by aides and scored	PCP provided with summary of results listing past diagnoses, test failures, parent concerns but since PCP visit not on same day not clear if there is additional contact; follow-up at PCP discretion; supplementary counseling available	PCPs said it was useful	4% of screen patients were "new cases" (57% of those identified as at risk)
Murphy 1996[42]	379 youth 6–16 at school-based and neighborhood primary health care centers	PSC with additional questions about function, mental health care, demographics	Not specified	Not specified but PCPs could refer youth regardless of score; additional question about function included on form but use not stated	37% of those positive not referred (reasons not known but 36% of not referred positives had prior care)	Referrals for mental health care increased 6-fold; 69% of referrals had positive screen
Pagano 1996[71]	117 children 4–5 at school-based and neighborhood primary care centers	PSC with additional questions about function, mental health care, demographics	Not specified	Questions added to PSC about functioning to help clinicians assess need for referral	Not stated	Parents who felt child needed help or wanted services more likely to be positive (14%) versus others (1%)
Navon 2001[34]	570 2–18 years in urban primary care centers	PSC	Scored by research assistant	PCP told to use results as "adjunct to their clinical judgment… indicator of need for further services." Multidisciplinary team meeting at PC site discussed program issues and individual cases. Not clear if all providers attended.	Not stated	Of sub-sample of positives reviewed by team (25), 5 found to be OK, 4/20 with need not previously identified.

Lead author, year, and citation[a]	Setting and population	Instrument	Who scores and training in scoring	Follow-up to screen and training or assistance with follow-up	Impact on visit	Impact on referrals and utilization
Olson 2005[43]	165 adolescents in 6 rural primary care practices	90-item Healthy Teen screener based on GAPS	PCPs involved in screen and follow-up plan development over 4 'PDSA' cycles; in use scored by computer with summary	Two-hour training on motivational interviewing, goal setting, action plans, patient-centered counseling; authors concluded that more training would have been helpful as would have been handouts.	PCPs found it hard to develop action plans except when teen had specific concern; thought it would be better to use action plans for those already engaged; allowed use of time for counseling rather than data gathering.	Not applicable
Olson 2009[44]	1,052 youth 11–19 in 5 rural primary care practices	90-item Healthy Teen screener based on GAPS (younger and older teen versions)	Computer scores; PCP can see printed report or scan all answers electronically.	PCPs involved in development had role in deciding about cut-offs; otherwise training not specified. Part of screener assesses teen readiness to change; these results highlighted for PCP	PCPs found screen helped target most at risk and those interested in change; helped better use time in visit, though trouble if too many risks presented at once and forced to prioritize.	Not applicable
Schubiner 1994[49]	152 youth/young adults 14–23 in primary care	Safe Times Questionnaire	In intervention arm PCP reviews and scores screen	Training on preventive health screening and general guidelines for interviewing and health education, use of mnemonic to remember risk categories, psychometrics of screener	Videotape assessment compared visits with and without screener: screener visits shorter by 4 minutes (less time in assessment) but no increase in information time.	Not applicable
Smith 1990[64]	205 youth 10–17; urban hospital primary care clinic	STAI, CDI	Not stated who scores instrument	Providers had to assess patient and develop provision diagnosis before receiving screening results; use unexpectedly positive screen to explore psychosocial history. MH assessment available in clinic.	15% of patients had elevated screens but were not identified as having MH problem by PCP	Not applicable

Lead author, year, and citation[a]	Setting and population	Instrument	Who scores and training in scoring	Follow-up to screen and training or assistance with follow-up	Impact on visit	Impact on referrals and utilization
Williams 2011[69]	399 youth 4–18 coming to ED	DPS	Computer scored	ED physicians not involved unless "urgent mental health concern" detected; in that case facilitated a referral. On-site SW.	97+% of nurse and physician providers not bothered by screening	Not applicable
Wintersteen 2010[46]	1,415 youth 12–18 in 3 urban primary care clinics	Two stage screen with total 8 questions	Not formally scored; questions asked as part of PCP's interview of patient	90-minute training on youth suicide, including epidemiology, risk and protective factors, assessment, management. SW in clinic to make referrals.	Increased three-fold rate of inquiry about SI; increased rate of identifying SI	Increased rate of referral to MH
Zuckerbrot 2006[8]	734 youth 13–17 at health maintenance visit or sick visit at suburban primary care practice	Columbia Depression Scale and depression module of DISC-IV as optional second stage	DISC is computer scored; Providers scored CDS. Providers taught how to use instruments and cut-offs; training included discussion of predictive values at various cut-off values	Clinicians "educated" about adolescent and how use score in combination of assessment of positive symptoms; had option to use clinical interview or DISC as second-stage screen; also received list of referral resources	Providers reported low burden to use CDS but DISC harder; interested in continuing use of CDS but mixed opinions of DISC; overall more comfortable assessing depression; CDS helpful for opening discussion	Not applicable.
Rausch 2012[47]	636 youth mean age 16.6 seen in three primary care practices	Columbia Depression Scale	Reviewed and scored by provider. Separate scoring sheet indicated cutoffs and had checkbox for suicidality or need for emergency treatment.	Providers and support staff got "brief introduction" to adolescent depression, instrument; consider referral is any current or previous suicidal thoughts, score above cut-off, or other concern.	Providers reported higher level of confidence for identifying and managing depression and felt youth had greater comfort level; 37% of providers thought too burdensome for sick visit	12.6% of those screened received referral for mental health service—did not seem to be an increase from pre-screening though not measured.

Note: Note: CDI = Children's Depression Inventory; CDS = Columbia Depression Scale; CES-D = Center for Epidemiologic Studies Depression Scale; DISC = Diagnostic Interview Schedule for Children; DPS = Diagnostic Predictive Scales; ED = Emergency Department; MH=Mental Health; PC = Primary Care; PCP = Primary Care Provider; PDA = personal digital assistant; PDA-DSS = personal digital assistant–based decision support system;

PSC = Pediatric Symptom Checklist; SDQ = Strengths and Difficulties Questionnaire; STAI = State-Trait Anxiety Inventory.

[a] List of papers in alphabetical order by first author except where a series of papers discussed distinct studies carried out by the same group

[b] Involve similar populations using the same electronic screening system. A paper describing the system but not reporting on a particular study (Julian 2007[70]) describes features related to confidentiality during administration and decision assistance for the primary care provider (suggested preventive services and referrals, real-time monitoring of results by a suicide prevention team) that are not mentioned in the reports of the four studies. In addition, Stevens 2009[81]describes a trial of enhanced telephone follow-up of a subset of youth who screened positive using the system, and Stevens 2010[82] describes readiness to change among a subset who screened positive for substance use. Neither of these papers provides additional details relevant to the focus of the review.

Table S2. Aspects of Screening Engagement

Lead author, year, and citation[a]	Where and by whom screen introduced	How is purpose explained	Parent/youth preferences for framing (if studied)	Confidentiality procedures for youth	Confidentiality statements to youth	Acceptance rate if available and applicable	Accommodation for literacy or language
Applegate 2003 [39]	In waiting room (recruited and consented by RA)	Not stated	No change in parent satisfaction pre-post intervention	Parents only	Not applicable	Not applicable	Not stated
Asarnow 2005[50]; Asarnow 2009[76]; Wells 2012[77]	Research assistant obtained consent from parent and youth	"Interested in how youth feeling;" important to talk to provider about difficulties including stress or depression	Not stated	Self-administered by youth	Not stated	13% declined screen	Limited to English
Ballard 2012[63]; Horowitz 2010[66]	Approached by study staff member in ED but completed in exam room	Not directly stated but included desire to screen for suicidal ideation	Most youth thought it "OK." Some felt relief. Minority reported stress. Wanted providers to understand them better, identify risk, prevent harm, connect with resources.	Youth administered screen alone in exam room	Youth told that answers would be shared with clinician and parents would be notified if concern for safety	Parents could decide if medical patients would be screened; overall accept rate 60%; reasons for decline included parent not wanting to leave room, too young to be asked about suicide, too ill to be asked.	Excluded developmental delay and non-English speakers
Berger-Jenkins 2012[40]	Given screen by front desk personnel at well visits	Not directly stated; screener asked a first question about concerns for behavior, mood, or learning	Not studied	Parents only	Not applicable	One-third of eligible parents completed at least first surveillance question; reasons for not completing unknown	PSC in English and Spanish
Briggs 2012[58]	Nursing staff gave screener to parents in exam room	Letter provided reviewing purpose of screening (details not stated)	Not studied	Parents only	Not applicable	64% of eligible children screened at least once (reasons not known)	Screens in English and Spanish, family could ask for help with completion

Lead author, year, and citation[a]	Where and by whom screen introduced	How is purpose explained	Parent/youth preferences for framing (if studied)	Confidentiality procedures for youth	Confidentiality statements to youth	Acceptance rate if available and applicable	Accommodation for literacy or language
Chisolm 2008[52]	Adolescents invited by clinic registration or research staff but parents had to provide consent if under 18; completed on tablet in waiting room	Not stated	Perceived usefulness and trust were positively related to youth satisfaction	Youth responds on tablet in waiting area	Told clinician would see results	Acceptance rate not stated; 9% did not complete after they had started	Not stated, but literacy issues stated as one of the reasons for non-participation
Chisolm 2009[10]	Completed screen in waiting room, how approached not stated	Not stated	Not studied	Youth responds on tablet in waiting area	Told clinician would see results	25% of eligible population screened	Not stated
Stevens 2008[48]	Approached by registration or research staff	Not stated	Not studied	Youth responds on tablet in waiting area	Told clinician would see results	Recruitment rate for registration staff not known; ranged from 60–95% among three RA's	Not stated
Gardner 2010[53]	Approached by registration or research staff	Not stated	Not stated	Youth responds on tablet in waiting area	Told clinician would see results	Recruitment rate for registration staff not known; ranged from 60-95% among three RA's	Not stated
Diamond 2010[72]	Recruited by research staff	Not stated	Sub-sample of adolescent responders thought it helped during appointment and favored use in future	Youth reply on computer – location not specified	Not stated	Not applicable	Not stated

Lead author, year, and citation[a]	Where and by whom screen introduced	How is purpose explained	Parent/youth preferences for framing (if studied)	Confidentiality procedures for youth	Confidentiality statements to youth	Acceptance rate if available and applicable	Accommodation for literacy or language
Fein 2010[59]	ED nurse or technician asked adolescents after their medical assessment	Used "tri-fold pamphlet" explaining purpose (details not stated) for recruiting then "slide and audio show" explaining rationale	Not studied	Family members "encouraged but not forced" to leave room while youth uses computer	Introduction explains "standard limits of confidentiality"	65% acceptance rate for screening but overall only 33% of eligible screened	Excluded non-English speakers and those with hearing or visual impairment; did offer option of listening to questions via headphones
Pailler 2009[45, 60]	Presented by ED nurse or technician once patient had initial assessment	Brochure explained screening initiative and bounds on confidentiality (given to family as placed in exam room); introductory slide show provided rationale for screening and reviewed confidentiality	Parents wanted to be involved and give permission; youth did not want screen to interfere with other concerns; wanted provider to be sensitive and wanted to know about confidentiality; screen earlier to avoid "targeting;" wanted more information about meaning of screening results	Conducted in individual patient rooms; option to listen to introduction on headphones; nurses and technicians requested parents to give youth privacy while completing screen; results not printed to patient room	Adolescents could request confidentiality if not a threat to self or others	About 20% of eligible patients screened; slight decrease after nurses not reminded; apparently related mostly to staff issues; proportion of families accepting not stated	Option to use audio assisted administration
Gall 2000[54]	All youth attending school-based health center asked as part of registration	Not stated	Not studied	Not stated	Not stated	95% agreed to complete screen	Not stated

Lead author, year, and citation[a]	Where and by whom screen introduced	How is purpose explained	Parent/youth preferences for framing (if studied)	Confidentiality procedures for youth	Confidentiality statements to youth	Acceptance rate if available and applicable	Accommodation for literacy or language
Garrison 1992[65]	Given to all parents at well-child visits; not stated by whom	Not stated, but parents are asked if they are willing to discuss the results with pediatrician	Not studied	Parent only	Not applicable	Proportion screened fell over time from 95% to 60% (attributed to repeat screening); of those stating concerns, 37% did not wish to discuss with pediatrician	Screen provided in English and Spanish
Gruttadero 2011[38]	Not applicable	Not applicable	Parents feel that asking about MH at well visits helps normalize these concerns and create comfort	Not applicable	Not applicable	Note applicable	Not applicable
Hacker 2006[11]	Parents and youth completed screen in waiting room, given by registration staff at annual visit	Not stated	In pilot phase parents welcomed use of tool	Youth completed their own screener in waiting area	Not stated	No refusals in pilot phase; 85% of eligible screened in implementation phase; missing forms and literacy issues	Screening instrument in 6 languages; 4% of screens invalid because of excessive missing items
Hacker 2009[12]	Parents and youth completed screen in waiting room, given by registration staff at annual visit	Not stated	Not studied	Youth completed their own screener in waiting area	Not stated	70% of eligible had initial screening; not provided, literacy, language, lost form issues	Screening instrument in 6 languages

Lead author, year, and citation[a]	Where and by whom screen introduced	How is purpose explained	Parent/youth preferences for framing (if studied)	Confidentiality procedures for youth	Confidentiality statements to youth	Acceptance rate if available and applicable	Accommodation for literacy or language
Hartung 2010[55]	Given to all parents at well visits by receptionist or on indicated basis if parent or provider had MH concern. Completed in waiting or exam room.	Not stated	Not studied	Parent only	Not applicable	Not stated	Not stated; reading level grade 8.8
Hayutin 2009[51]	Parents approached in waiting room by research assistant	"Study investigating strategies for improving attention to psychosocial issues…" Parents also given information about interpreting scores and told they could raise concerns regardless of score	Not studied	Parent only	Not applicable	80% agreed to be in study	Not described
Horwitz 2008[57]	Introductory letter and reminded by phone before visit; online screen completed at home	Not stated	53% thought that answering the questions would be of some help in discussing concerns; 85% somewhat likely to use screen a second time	Parent only	Not applicable	Overall 11% completion rate (range among three sites 9–19%); most did not remember letter, too busy, technical issues	Not stated

Lead author, year, and citation[a]	Where and by whom screen introduced	How is purpose explained	Parent/youth preferences for framing (if studied)	Confidentiality procedures for youth	Confidentiality statements to youth	Acceptance rate if available and applicable	Accommodation for literacy or language
Husky 2011[56]	Parents offered screening when call for appointment; told it is optional but no cost, asked to come early if interested; nurse obtains consent	Not stated		Youth completes computerized screen alone in exam room; results reviewed privately with adolescent but informs parent if MH concern	Confidential except if danger to self or others, abuse, "significant functional impairment"	45% completed screening, with proportion accepting varying over time.	Not stated
21. Jee 2011[41]	Nurse gave form to youth in exam room while waiting for provider (also to foster parent if present)	Not stated	Not studied	Youth may or may not be alone in exam room	Not stated	92% of eligible completed screen	Limited to English speakers
Jellinek 1999[78]; Wasserman 1999[79]	Parents approached in waiting areas by clinical personnel	Written consent obtained but framing not stated	Not studied	Parent only	Not applicable	97% of forms received for processing complete; rate somewhat higher in middle and higher SES versus lower; overall acceptance rate not known	No exclusion criteria described.
Kelleher 1997[80]	Parents enrolled by clinician	Written consent obtained but framing not stated	Not studied	Parents only	Not applicable	>82% of eligible children participated	No exclusion criteria described

Lead author, year, and citation[a]	Where and by whom screen introduced	How is purpose explained	Parent/youth preferences for framing (if studied)	Confidentiality procedures for youth	Confidentiality statements to youth	Acceptance rate if available and applicable	Accommodation for literacy or language
John 2007[61]	Nursing students could use the screen in an ambulatory clinical placement; approached child or adolescent	Not stated	Not studied	Not stated	Not stated	One-third of eligible encounters screened; most barriers seemed to be related to nursing student concerns about appropriateness of screening in ED, specialty, or private practice setting and concern about follow-up	Not stated (but most of those screened were Hispanic or African-American)
King 2009[67]	Research assistants obtained consent from parent	Not stated	Not studied	Youth completed screen alone	Parent and clinician would be notified if screen at "high risk"	61% agreed to participate	Excluded non English speakers
King 20012[68]	Research assistants obtained consent from parent	Not stated	Not studied	Youth completed screen alone	Some youth told their results would be reviewed with them by a staff member	Lower income youth less likely to report depression regardless of review status; lower income less likely to report suicidality if told results would be reviewed	Reading level varied from 0.2 to 6.1
Kuhlthau 2011 [9]	Not applicable (paper based on Medicaid claims for screening)	Not applicable	Not studied	Not known	Not known	Making screening mandatory for Medicaid-enrolled children increased proportion of visits with screens to 54%	Not known

Lead author, year, and citation[a]	Where and by whom screen introduced	How is purpose explained	Parent/youth preferences for framing (if studied)	Confidentiality procedures for youth	Confidentiality statements to youth	Acceptance rate if available and applicable	Accommodation for literacy or language
Metz 1976[62]	Screening takes place as part of hour-long "multiphasic health examination" that is separate from subsequent well visit	Not stated	Not studied	Children interviewed alone by an aide without parent if child willing to separate	Not stated	Parents of about half of children identified as "new cases" accepted MH follow-up interview; but three-quarters of parents asking for interview were of children classified as low risk	Not known; tests and scales administered by trained paraprofessionals
Murphy 1996[42]	Parent asked to fill out screener in waiting room; not stated where screening conducted once items were read aloud to parents and record answers	Described as voluntary	Not studied	Parent only	Not applicable	Based on logs screens administered to 1⁄3 to ½ of eligible parents; 90% of those approached agreed More positive screens when read aloud versus written administration	English and Spanish forms available; during study noted that parents had difficulty with forms so changed to have RA read the forms to all parents
Pagano 1996[71]	Parent asked to fill out screener in waiting room; not stated where screening conducted once items were read aloud to parents and record answers	Form explained reason for the psychosocial screening study (exact contents not stated in paper)	Not stated	Parent only	Parent only	Acceptance rate not known No difference in positive rate by method of administration (paper vs. oral)	English and Spanish forms available; during study noted that parents had difficulty with forms so changed to have RA read the forms to all parents

Lead author, year, and citation[a]	Where and by whom screen introduced	How is purpose explained	Parent/youth preferences for framing (if studied)	Confidentiality procedures for youth	Confidentiality statements to youth	Acceptance rate if available and applicable	Accommodation for literacy or language
Navon 2001[34]	All patients approached in waiting area by RA	Clinic including questions about children's emotions and behavior as part of their pediatric visit but voluntary; results would be put in child's record	Not studied	Parent only	Not applicable	About 90% agreed to have child screened	Bilingual research assistant
Olson 2005[43]	Not stated; used as routine in participating practices	Not stated	Youth said novelty of PDA was engaging and preferred to "being grilled;" reported being candid and said it made it easier to discuss issues	Youth used PDA with small screen and answers that "disappeared" so confidentiality possible even though administered in waiting area	Not stated	Not known	Not stated
Olson 2009[44]	Given to adolescents during health maintenance visits	Not stated	Youth said screening resulted in their being listened to more carefully, had fewer unexplored concerns, greater belief in confidentiality	Youth used PDA in waiting area as in Olson 2005	Not stated	Not known	Not stated

Lead author, year, and citation[a]	Where and by whom screen introduced	How is purpose explained	Parent/youth preferences for framing (if studied)	Confidentiality procedures for youth	Confidentiality statements to youth	Acceptance rate if available and applicable	Accommodation for literacy or language
Schubiner 1994[49]	Completed prior to visit	Part of study where purpose stated as learning how adolescents are interviewed	Study compared structured interview with review of the screener: review led to shorter visit and led to more accurate detection of MH problems	Completed in waiting room	Not stated	Not stated (screening part of randomized trial)	Not stated
Smith 1990[64]	Consecutive adolescent clinic patients	"Mood questionnaire given to all new patients"	Not studied	Not stated	Not stated	90% of eligible participated; mostly excluded by language	Excluded non-English speakers
Williams 2011[69]	RA's approached families and obtained consent	Short orientation to computer program; framing not stated	Most parents and children thought screening acceptable but only 61% thought it helpful; minority parents and those whose children had MH problem more likely to find it helpful	Headphones and audio-assisted administration for confidentiality	Not stated	Not stated	Excluded non-English speakers
Wintersteen 2010[46]	Suicide questions built into EMR psychosocial template	Framed by other questions in psychosocial template	Not studied	Not stated (part of primary care visit)	Not stated (part of primary care visit)	Adding item to EMR increased rate of inquiry from 37 to 82%	Not applicable
Zuckerbrot 2006[8]	Front desk staff offered initial paper screen to all eligible youth	Not stated (but results suggest that front-desk staff could provide information about process)	Not studied	Taken to confidential space, sealed screen after completion	Not stated	53% of eligible completed screens; reason for most missing not known; few recorded refusals	Follow-up assessment found that front-desk staff needed training on how to respond to patient and parent queries and concerns

Lead author, year, and citation[a]	Where and by whom screen introduced	How is purpose explained	Parent/youth preferences for framing (if studied)	Confidentiality procedures for youth	Confidentiality statements to youth	Acceptance rate if available and applicable	Accommodation for literacy or language
36. Rausch 2012[47]	Given by medical assistant.	Not stated	Not studied	Not stated	Not stated	92% of those approached agreed but assistants gave screener to only about 25% of eligible.	CDS available in English and Spanish

Note: CDS = Columbia Depression Scale; ED = emergency department; EMR = electronic medical record; MH = mental health; PDA = personal digital assistant; PSC = Pediatric Symptom Checklist; RA = research assistant; SES = socioeconomic status.

[a] List of studies in alphabetical order by first author except where a series of papers discussed distinct studies carried out by the same group.

Table S3. PRISMA Checklist for Systematic Review

Topic title	Item	Page
Title	1	
Abstract		
Structured summary	2	
Introduction		
Rationale	3	
Objectives	4	
Method		
Protocol	5	
Eligibility	6	
Information sources	7	
Search	8	Supplement 1, available online
Study selection	9	
Extraction process	10	
Data items	11	Tables S1 and S2 columns, available online.
Bias in individual studies	12	Not assessed
Summary measures	13	Not applicable—narrative review
Synthesis of results	14	Narrative synthesis
Risk of bias across studies	15	
Additional analyses	16	Not applicable
Results		
Study selection	17	
Study characteristics	18	Xxx, supplemental tables, available online
Risk of bias within studies	19	
Results of individual studies	20	Tables S1 and S2, available online
Synthesis of results	21	
Risk of bias across studies	22	
Additional analyses	23	
Discussion		

Summary of evidence	24	
Limitations	25	
Conclusions	26	
Funding	27	