Search Strategy Documentation:

Search string for PubMed:
Search query #1

Concept 2	AND	Concept 2	AND	Concept 3	AND	Concept 4
Artificial Intelligence		**Primary Care**		**Barriers or Challenges**		**Adoption or Implementation**
(("Artificial Intelligence"[Mesh] OR "Machine Learning"[Mesh] OR "Deep Learning"[Mesh] OR "Natural Language Processing"[Mesh] OR "Expert Systems"[Mesh] OR "Algorithms"[Mesh] OR "Decision Support Systems, Clinical"[Mesh]) OR ("Artificial Intelligence"[tiab] OR "AI"[tiab] OR "Machine Learning"[tiab] OR "Deep Learning"[tiab] OR "Natural Language Processing"[tiab] OR ("Clinical Decision Support System*"[tiab])		(((("Primary Health Care"[Mesh] OR "General Practice"[Mesh] OR "Family Practice"[Mesh] OR "Physicians, Primary Care"[Mesh] OR "Community Health Centers"[Mesh] OR "Ambulatory Care Facilities"[Mesh]) OR ("Primary Care"[tiab] OR "Primary Health Care"[tiab] OR "General Practice"[tiab] OR "Family Medicine"[tiab] OR "Family Practice"[tiab] OR "Community Health Center*"[tiab] OR "Outpatient Clinic*"[tiab] OR "Ambulatory Care"[tiab]))))		((Barrier*[tiab] OR Challenge*[tiab] OR Obstacle*[tiab] OR "Limitation*"[tiab] OR "Hurdle*"[tiab] OR "Concern*"[tiab] OR "Gap"[tiab] OR "Clinician Trust"[tiab] OR "Patient Acceptance"[tiab] OR "Workflow Integration"[tiab] OR "Training Need*"[tiab] OR "Interoperability"[tiab]		(Interoperability[tiab] OR Integration[tiab] OR Challenge*[tiab])) OR "Ethical Concern*"[tiab] OR "Data Privacy"[tiab] OR "Attitude of Health Personnel"[Mesh] OR "Patient Acceptance of Health Care"[Mesh] OR "Trust"[Mesh])) AND (("Adoption"[tiab] OR "Implement*"[tiab] OR "Uptake"[tiab] OR "Integration"[tiab] OR "Utilization"[tiab] OR "Utilisation"[tiab] OR "Use"[tiab] OR "Diffusion of Innovation"[Mesh] OR "Implementation Science"[Mesh]))

Search Query	Label	Results
#1	Initial Search	1,211
#2	Refined Search	1,203

#3	**#1 OR #2**	**1,758**
#4	**Iterative Search**	**1,246**

Results from the iterative search were perceived most relevant and were included for screening.- 1,246

Search query 2 for PubMed:

Concept 1: Artificial Intelligence	Search string	Results
Mesh terms #1	((((((((((((((((((("Artificial Intelligence"[Mesh] OR "Generative Artificial Intelligence"[Mesh]) OR "Machine Learning"[Mesh]) OR "Deep Learning"[Mesh]) OR "Large Language Models"[Mesh]) OR "Adaptive Algorithms"[Mesh]) OR "Pattern Analysis, Machine"[Mesh]) OR "Prediction Methods, Machine"[Mesh]) OR "Predictive Learning Models"[Mesh]) OR "Boosting Machine Learning Algorithms"[Mesh]) OR "Random Forest"[Mesh]) OR "Support Vector Machine"[Mesh]) OR "Supervised Machine Learning"[Mesh]) OR "Generative Adversarial Networks"[Mesh]) OR "Genetic Algorithms"[Mesh]) OR "Hidden Markov Models"[Mesh]) OR "Machine Learning Algorithms"[Mesh]) OR "Particle Swarm Optimization"[Mesh]) OR "Prediction Algorithms"[Mesh]) OR "Expert Systems"[Mesh]) OR "Natural Language Processing"[Mesh]) OR "Unsupervised Machine Learning"[Mesh]) OR "Intelligent Systems"[Mesh]) OR "Dimensionality Reduction"[Mesh] Filters: in the last 5 years	136,476
Keywords #2	"artificial intelligence"[tiab] OR AI[tiab] OR "machine intelligence"[tiab] OR "AI-based"[tiab] OR "AI-driven"[tiab] OR "AI-enabled"[tiab] OR "generative artificial intelligence"[tiab] OR "generative AI"[tiab] OR "gen AI"[tiab] OR "AI generation"[tiab] OR "text-to-image AI"[tiab] OR "machine learning"[tiab] OR ML[tiab] OR "automated learning"[tiab] OR "ML algorithm*"[tiab] OR "ML model*"[tiab] OR "machine-learned"[tiab] OR "deep learning"[tiab] OR DL[tiab] OR "deep neural network*"[tiab] OR DNN[tiab] OR CNN[tiab] OR "deep model*"[tiab] OR "deep learn*"[tiab] OR "large language model*"[tiab] OR LLM[tiab] OR GPT[tiab] OR "foundation model*"[tiab] OR "transformer-based model*"[tiab] OR ChatGPT[tiab] OR "adaptive algorithm*"[tiab] OR "self-learning algorithm*"[tiab] OR "adaptive system*"[tiab] OR "adaptive learning"[tiab] OR "machine pattern analysis"[tiab] OR "pattern recognition"[tiab] OR "pattern detect*"[tiab] OR "pattern-based model*"[tiab] OR "machine prediction method*"[tiab] OR "predictive algorithm*"[tiab] OR "predictive model*"[tiab] OR "predictive machine learning"[tiab] OR "predictive learning model*"[tiab] OR "predictive AI"[tiab] OR "forecasting model*"[tiab] OR "learning model*"[tiab] OR "boosting algorithm*"[tiab] OR XGBoost[tiab] OR AdaBoost[tiab] OR "gradient boosting"[tiab] OR "ensemble boosting"[tiab] OR "random forest*"[tiab] OR "RF model*"[tiab] OR "tree-based model*"[tiab] OR "ensemble forest"[tiab] OR "support vector machine*"[tiab] OR SVM[tiab] OR "kernel classifier*"[tiab] OR "vector machine*"[tiab] OR "supervised learning"[tiab] OR "labeled data model*"[tiab] OR "supervised ML"[tiab] OR "classification model*"[tiab] OR "generative adversarial network*"[tiab] OR GAN[tiab] OR "adversarial model*"[tiab] OR "GAN model*"[tiab] OR "genetic algorithm*"[tiab] OR "evolutionary algorithm*"[tiab] OR "genetic model*"[tiab] OR "hidden Markov model*"[tiab] OR "probabilistic model*"[tiab] OR "sequence model*"[tiab] OR "ML algorithm*"[tiab] OR "learning algorithm*"[tiab] OR "machine learning method*"[tiab] OR "automated algorithm*"[tiab] OR "particle swarm"[tiab] OR "swarm optimization"[tiab] OR "evolutionary swarm algorithm*"[tiab] OR "prediction algorithm*"[tiab] OR "forecasting algorithm*"[tiab] OR "expert system*"[tiab] OR "rule-based system*"[tiab] OR "knowledge-based system*"[tiab] OR "decision support system*"[tiab] OR NLP[tiab] OR "natural language process*"[tiab] OR "language model*"[tiab] OR "text analysis"[tiab] OR "text mining"[tiab] OR "unsupervised learning"[tiab] OR "clustering algorithm*"[tiab] OR "unsupervised model*"[tiab] OR "unlabeled data"[tiab] OR "intelligent system*"[tiab] OR "intelligent agent*"[tiab] OR "AI system*"[tiab] OR "autonomous system*"[tiab] OR "dimensionality reduction"[tiab] OR PCA[tiab] OR t-SNE[tiab] OR UMAP[tiab] OR "feature reduction"[tiab] OR "data compression"[tiab] Filters: in the last 5 years	563,273
#3	Search: #1 OR #2 Filters: in the last 5 years	588,094
Concept 2 Primary care		
#4	"Ambulatory Care Facilities"[Mesh] OR "Outpatient Clinics, Hospital"[Mesh] OR "Mobile Health Units"[Mesh]) OR "Community Health Centers"[Mesh] OR "Primary Health Care"[Mesh] Filters: in the last 5 years	46,621
#5	Search: "primary health care"[tiab] OR "primary healthcare"[tiab] OR "primary care"[tiab] OR PHC[tiab] OR "first contact care"[tiab] OR "community health care"[tiab] OR primary care*[tiab] OR "ambulatory care facil*"[tiab] OR "ambulatory clinic*"[tiab] OR "outpatient clinic*"[tiab] OR "hospital outpatient"[tiab] OR "outpatient department*"[tiab] OR "mobile health unit*"[tiab] OR "mobile clinic*"[tiab] OR "health van*"[tiab] OR "mobile medical unit*"[tiab] OR "community health cent*"[tiab] OR CHC[tiab] OR "community clinic*"[tiab] OR "health center*"[tiab] Filters: in the last 5 years	90,428
#6	#4 OR #5	115,815
Concept 3 Barriers		
#7	"barrier*"[tiab] OR "access barrier*"[tiab] OR "implementation barrier*"[tiab] OR "challenge*"[tiab] OR "challenging factor*"[tiab] OR "implementation challenge*"[tiab] OR "obstacle*"[tiab] OR "structural obstacle*"[tiab] OR "practical obstacle*"[tiab] OR "limitation*"[tiab] OR "system limitation*"[tiab] OR "tech limitation*"[tiab] OR "infrastructure limitation*"[tiab] OR "hurdle*"[tiab] OR "adoption hurdle*"[tiab] OR "regulatory hurdle*"[tiab] OR "difficulty*"[tiab] OR "implementation difficulty*"[tiab] OR "operational difficulty*"[tiab] OR "constraint*"[tiab] OR "resource constraint*"[tiab] OR "infrastructure constraint*"[tiab] OR "budget constraint*"[tiab] OR "problem*"[tiab] OR "adoption problem*"[tiab] OR "technology problem*"[tiab] OR "issue*"[tiab] OR "critical issue*"[tiab] OR "system issue*"[tiab] OR "technical issue*"[tiab] OR "complication*"[tiab] OR "deployment complication*"[tiab] OR "workflow complication*"[tiab] OR "setback*"[tiab] OR "early setback*"[tiab] OR "development setback*"[tiab] OR "drawback*"[tiab] OR "system drawback*"[tiab] OR "design drawback*"[tiab] OR "gap*"[tiab] OR "implementation gap*"[tiab] OR "practice gap*"[tiab] OR "knowledge gap*"[tiab] OR "concern*"[tiab] OR "ethical concern*"[tiab] OR "privacy concern*"[tiab] OR "practical concern*"[tiab] Filters: in the last 5 years	1,970,858
Combined	#3 AND #6	5,185
	(#3 AND #6) AND #7	1,818

Records included for screening- (#3 AND #6) AND #7 – 1,818

The results both the search strategies(Search Query 1 and Search Query 2) were included for screening (1246 + 1818= 3064)

Google Scholar:

Search String 1: 5,930hits

("Artificial Intelligence" OR AI) ("Primary Care") ("clinician trust" OR "provider trust" OR "patient acceptance" OR "patient trust") (barrier OR challenge)

Search String 2: 9,460hits

("Artificial Intelligence" OR "Machine Learning") ("Primary Care") ("workflow integration" OR interoperability OR "EHR integration" OR "Electronic Health Record integration") (barrier OR challenge)

Search String 3: 20,800hits

("Artificial Intelligence" OR "Machine Learning") ("Primary Care" OR "General Practice") (barrier OR challenge OR limitation) (adoption OR implementation OR uptake)

Altering keyword search did not appear to increase relevance beyond the first 20 pages of results.

The results of search string1 Up to the first 10 pages were included for screening(200 records)

IEEE Xplore:
Search String 1: 6,368hits
("All Metadata":"Artificial Intelligence" OR "All Metadata":"AI OR "All Metadata":"Deep Learning" OR "All Metadata":deep learning OR "All Metadata":"Natural Language Processing" OR "All Metadata":NLP) AND ("All Metadata":"Heathcare" OR "All Metadata":"Clinical" OR "All Metadata":"Practice")

Search String 2: 3,353hits

("All Metadata":"Artificial Intelligence" OR "All Metadata":"Machine Learning" OR "All Metadata":ML OR "All Metadata":"Deep Learning" OR "All Metadata":"Natural Language Processing" OR "All Metadata":NLP) AND ("All Metadata":"Healthcare") AND ("All Metadata": Implementation OR "All Metadata":Barrier* OR "All Metadata":Usage OR "All Metadata":Adoption)

Search String 3: 3,513hits

("Full Text & Metadata":Barrier* OR "Full Text & Metadata":Challenge* OR "Full Text & Metadata":Limitation* OR "Full Text & Metadata":"Workflow Integration" OR "Full Text & Metadata":"System Integration" OR "Full Text & Metadata":Usability* OR "Full Text & Metadata":"User Acceptance" OR "Full Text & Metadata":"User Perception" OR "Full Text & Metadata":Interoperability) AND ("All Metadata":"Artificial Intelligence" OR "All Metadata":AI OR "All Metadata": "Machine Learning" OR "All Metadata":"Deep Learning" OR "All Metadata":"Natural Language Processing" OR "All Metadata":NLP) AND ("All Metadata":Healthcare OR "All Metadata":"Health Care");
Filters applied : Journal & 1884-2025

Search String 4: 17,358

("All Metadata":"Artificial Intelligence" OR "All Metadata":"Machine Learning" OR "All Metadata":"Deep Learning" OR "All Metadata":"Natural Language Processing") AND ("All Metadata":Healthcare OR "All Metadata":"Health Care" OR "All Metadata":"Medical Informatics" OR "All Metadata":"Health systems") AND ("Abstract":Barrier* OR "Abstract":Challenge* OR "Abstract":Limitation* OR "Abstract":Adoption OR "Abstract":Implement* OR "Abstract":Uptake OR "Abstract":Integration) OR ("Document Title":Barrier* OR "Document Title":Challenge* OR "Document Title":Limitation* OR "Document Title":Adoption OR "Document Title":Implement* OR "Document Title":Uptake OR "Document Title":Integration)
Filters applied: Journal & 1884-2025

Filters of journal was applied to include articles from peer reviewed journals in the intial screening.

The results of Search string 1 up to the first 10 pages were included for screening.(800 records)

Total (before Deduplication) = 3064 + 200 + 800 = 4064

Data Charting form:

Last Name of First Author	Year	Journal	Barriers Identified	Type Of Study	Study participants	Primary care setting	AI method	Objective of Implementation	Evaluation Type	Phase of Implementation
Kueper	2022	BMJ Health & Care Informatics	['Data Quality Issues', 'Lack of Integration', 'Regulatory/Legal factors', 'Equity & Bias']	Qualitative	Primary care physicians, Nurses, Patients, Caregivers, Researchers, Digital health decisionmakers, Stakeholders with interest in AI	No setting specified.	Model not specified	Risk prediction.	Hypothetical Only	NA
Kueper	2024	F1000Research	['Data Quality Issues', 'Workflow Disruption', 'Lack of Integration', 'Low Usability']	Mixed Methods	Primary care physicians, Nurses, Patients, Researchers, Digital health decisionmakers	Community health center	Machine Learning (ML), Hybrid Model	Risk prediction	Hypothetical Only	NA
Lagerin	2021	Primary Health Care Research & Development	['Training Needs', 'Low Usability', 'Lack of Integration', 'Workflow Disruption']	Qualitative	Nurses, Patients	In-person clinic	Clinical Decision Support Systems (CDSS)	Quality Improvement	Empirically Evaluated	Pre-Implementation
Laka	2021	International Journal of Environmental Research and Public Health	['Training Needs', 'Trust or Explainability issues', 'Workflow Disruption', 'Patient Acceptability']	Mixed Methods	Primary care physicians	Community health center.	Clinical Decision Support Systems (CDSS)	Quality Improvement.	Empirically Evaluated	Post-Implementation
Lee	2024	Cureus	['Data Quality Issues', 'Lack of Integration', 'Regulatory/Legal factors', 'Trust or Explainability issues']	Review/Evidence Synthesis	Primary care physicians, Nurses, Patients, Digital health decisionmakers, Stakeholders with interest in AI	No setting specified.	Model not specified	Administrative automation	Empirically Evaluated	NA
Li	2024	Nature Medicine	['Workflow Disruption', 'Data Quality Issues', 'Equity & Bias']	Mixed Methods	Primary care physicians, Patients, Endocrinology residents, Professional graders	In-person clinic setting.	Deep Learning (DL) and Natural Language Processing (NLP)	Diagnosis.	Hypothetical Only	NA
Li	2025	Australian Journal of Rural Health	['Cost', 'Workflow Disruption', 'Low Usability', 'Lack of Integration']	Quantitative (Observational)	Patients , Researchers , Stakeholders	Rural/remote care setting	Deep Learning (DL)	Diagnosis	Empirically Evaluated	Implementation

					with interest in AI					
Liaw	2022	Annals of Family Medicine	['Training Needs', 'Equity & Bias', 'Trust or Explainability issues', 'Data Quality Issues']	Opinion Piece	Primary care physicians , Nurses , Researchers , Digital health decisionmakers , 9Stakeholders with interest in AI	No setting specified	Model not specified	Diagnosis	Hypothetical Only	NA
Lin	2022	J Am Board Fam Med	['Equity & Bias', 'Data Quality Issues', 'Lack of Integration', 'Trust or Explainability issues']	Opinion Piece	Primary care physicians , Patients , Researchers , Digital health decisionmakers , Stakeholders with interest in AI	No setting specified	Model not specified	Diagnosis	Hypothetical Only	NA
Mahlknecht	2023	BMC Primary Care	['Workflow Disruption', 'Low Usability', 'Lack of Integration', 'Trust or Explainability issues']	Quantitative (Interventional)	Primary care physicians, Patients	In-person clinic	Model not specified	History and physical	Empirically Evaluated	Implementation
Manski-Nankervis	2020	Medical Decision Making	['Workflow Disruption']	Mixed Methods	Primary care physicians , Patients	In-person clinic	Clinical Decision Support Systems (CDSS)	Quality Improvement	Empirically Evaluated	Implementation
Marcolino	2021	Journal of Medical Internet Research	['Workflow Disruption', 'Training Needs', 'Low Usability', 'Lack of Integration']	Mixed Methods	Primary care physicians, Nurses, Patients, Stakeholders with interest in AI	Community health center, Rural/remote care setting	Clinical Decision Support Systems (CDSS)	Quality Improvement	Empirically Evaluated	Implementation
Mehta	2023	Indian Dermatol Online J	['Data Quality Issues', 'Regulatory/Legal factors', 'Patient Acceptability', 'Lack of Integration']	Review/Evidence Synthesis	Primary care physicians, Patients, Researchers, Digital health decisionmakers	No setting specified	Model not specified	Diagnosis	Hypothetical Only	NA
Menchaca	2025	Annals of Family Medicine	['Cost', 'Low Usability', 'Workflow Disruption', 'Lack of Integration']	Opinion Piece	Primary care physicians, Researchers, Digital health decisionmakers	No setting specified	Model not specified	Administrative automation	Hypothetical Only	NA
Meunier	2023	Annals of Family Medicine	['Workflow Disruption', 'Training Needs', 'Low Usability', 'Lack of Integration']	Review/Evidence Synthesis	Primary care physicians, Nurses	No setting specified	Clinical Decision Support Systems (CDSS)	Quality Improvement	Empirically Evaluated	NA
Mikkelsen	2023	BMC Health Services Research	['Trust or Explainability issues']	Qualitative	Patients	In-person clinic	Model not specified	Diagnosis	Hypothetical Only	NA
Minian	2021	Addiction Science & Clinical Practice	['Training Needs', 'Workflow Disruption', 'Data Quality Issues', 'Patient Acceptability']	Qualitative	Primary care physicians, Nurses	Community health center, In-person clinic	Clinical Decision Support	Quality Improvement	Empirically Evaluated	Implementation

							Systems (CDSS)			
Mondal	2024	Journal of Education and Health Promotion	['Data Quality Issues', 'Trust or Explainability issues', 'Lack of Integration']	Quantitative (Observational)	Primary care physicians, Researchers	No setting specified	Natural Language Processing (NLP)	Diagnosis	Hypothetical Only	NA
Morrison	2021	Future Healthcare Journal	['Data Quality Issues', 'Regulatory/Legal factors', 'Low Usability', 'Trust or Explainability issues']	Qualitative	Primary care physicians, Researchers, Digital health decisionmakers, 20Stakeholders with interest in AI	No setting specified	Model not specified	Diagnosis	Empirically Evaluated	Pre-Implementation
Morton	2025	PLoS ONE	['Workflow Disruption', 'Trust or Explainability issues', 'Patient Acceptability']	Qualitative	Primary care physicians, Nurses, Researchers	Hybrid (in-person + virtual)	Clinical Decision Support Systems (CDSS)	Quality Improvement	Empirically Evaluated	Post-Implementation
Moschogianis	2025	Annals of Family Medicine	['Trust or Explainability issues', 'Patient Acceptability', 'Training Needs', 'Regulatory/Legal factors']	Qualitative	Primary care physicians, Nurses, Patients	Telemedicine	Model not specified	Administrative automation	Empirically Evaluated	Pre-Implementation
Nash	2023	J Am Board Fam Med (Journal of the American Board of Family Medicine)	['Data Quality Issues', 'Regulatory/Legal factors', 'Workflow Disruption', 'Low Usability']	Qualitative	Primary care physicians, Nurses, Digital health decisionmakers	Community health center	Model not specified	Quality Improvement	Empirically Evaluated	Pre-Implementation
Neff	2024	International Journal of Medical Informatics	['Low Usability', 'Lack of Integration']	Mixed Methods	Researchers	No setting specified	Clinical Decision Support Systems (CDSS)	Diagnosis	Hypothetical Only	NA
Nguyen	2025	Journal of Antimicrobial Chemotherapy	['Regulatory/Legal factors', 'Trust or Explainability issues', 'Data Quality Issues']	Quantitative (Observational)	Primary care physicians	In-person clinic	Large Language Models (LLMs)	Diagnosis	Empirically Evaluated	Implementation
Nguyen	2024	Bioelectronic Medicine	['Data Quality Issues', 'Trust or Explainability issues', 'Lack of Integration', 'Workflow Disruption', 'Equity & Bias']	Qualitative	Primary care physicians, Researchers, Digital health decisionmakers	In-person clinic	Machine Learning (ML), Clinical Decision Support Systems (CDSS)	Risk prediction	Empirically Evaluated	Implementation
Nolan	2023	Journal of Maine Medical Center	['Lack of Integration', 'Training Needs', 'Low Usability']	Quantitative (Observational)	Primary care physicians, Patients	Yes, Rural/remote care setting	Model not specified	Diagnosis	Empirically Evaluated	Implementation
Peek	2024	Yearb Med Inform	['Workflow Disruption', 'Trust or Explainability issues', 'Lack of Integration', 'Training Needs']	Review/Evidence Synthesis	Primary care physicians, Nurses, Patients, Caregivers, Researchers, Digital health decisionmakers, Stakeholders	No setting specified	Model not specified	Diagnosis	Empirically Evaluated	NA

					with interest in AI					
Peiffer-Smadja	2024	Journal of Medical Internet Research	['Training Needs', 'Regulatory/Legal factors', 'Workflow Disruption', 'Patient Acceptability', 'Low Usability']	Qualitative	Primary care physicians, Nurses, Researchers, Digital health decisionmakers, Stakeholders with interest in AI	Rural/remote care setting, Community health center	Clinical Decision Support Systems (CDSS)	Quality Improvement	Empirically Evaluated	Pre-Implementation
Peiffer-Smadja	2020	Journal of Medical Internet Research	['Training Needs', 'Patient Acceptability', 'Regulatory/Legal factors']	Mixed Methods	Primary care physicians, Researchers	Community health center	Model not specified	Quality Improvement	Empirically Evaluated	Pre-Implementation
Escalé-Besa	2024	Healthcare	['Data Quality Issues']	Review/Evidence Synthesis	Primary care physicians, Nurses, Patients, Researchers	In-person clinic, Telemedicine	Deep Learning (DL) and Machine Learning (ML)	Diagnosis	Hypothetical Only	NA
Evans	2025	Studies in health technology and informatics	['Trust or Explainability issues', 'Equity & Bias']	Qualitative	Primary care physicians	No setting specified	Clinical Decision Support Systems (CDSS)	Risk prediction, Diagnosis	Empirically Evaluated	Pre-Implementation
Fedele	2025	JMIR Formative Research	['Workflow Disruption', 'Training Needs', 'Low Usability', 'Lack of Integration']	Qualitative	Primary care physicians, Digital health decisionmakers, Stakeholders with interest in AI	In-person clinic	Model not specified	Quality Improvement.	Hypothetical Only	NA
Ford	2021	BMC Medical Informatics and Decision Making	['Trust or Explainability issues', 'Low Usability', 'Workflow Disruption', 'Training Needs']	Qualitative	Primary care physicians	In-person clinic	Clinical Decision Support Systems (CDSS)	Diagnosis, Risk prediction	Empirically Evaluated	Pre-Implementation
Garies	2024	Canadian Family Physician | Le Médecin de famille Canadien	['Data Quality Issues', 'Trust or Explainability issues', 'Equity & Bias', 'Patient Acceptability']	Qualitative	Primary care physicians, Nurses, Digital health decisionmakers, Stakeholders with interest in AI	No setting specified	Model not specified	Quality Improvement	Empirically Evaluated	Pre-Implementation
Garies	2024	Annals of Family Medicine	['Data Quality Issues', 'Trust or Explainability issues', 'Workflow Disruption', 'Patient Acceptability']	Qualitative	Primary care physicians, Nurses, Researchers, Digital health decisionmakers	Community health center	Model not specified	Administrative automation	Empirically Evaluated	Pre-Implementation
Gezer	2023	Sexual Health	['Workflow Disruption', 'Data Quality Issues', 'Low Usability', 'Trust or Explainability issues']	Qualitative	Primary care physicians	In-person clinic	Clinical Decision Support Systems (CDSS)	Quality Improvement	Empirically Evaluated	Pre-Implementation

Gold	2020	Healthcare	['Regulatory/Legal factors', 'Lack of Integration', 'Data Quality Issues', 'Low Usability']	Quantitative (Interventional)	Primary care physicians, Nurses, Patients, Researchers, Digital health decisionmakers, Stakeholders with interest in AI	Community health center	Clinical Decision Support Systems (CDSS)	Quality Improvement	Empirically Evaluated	Implementation
Goldberg	2025	Digital Health	['Workflow Disruption', 'Lack of Integration', 'Trust or Explainability issues']	Qualitative	Primary care physicians , Nurses	No setting specified	Clinical Decision Support Systems (CDSS)	Diagnosis	Empirically Evaluated	Post-Implementation
Greenhalgh	2025	Musculoskeletal Care	['Cost', 'Data Quality Issues', 'Trust or Explainability issues', 'Regulatory/Legal factors']	Qualitative	Primary care physicians, Patients, Stakeholders with interest in AI	In-person clinic	Model not specified	Diagnosis	Empirically Evaluated	Pre-Implementation
Hanna	2024	J Am Board Fam Med	['Workflow Disruption', 'Equity & Bias', 'Trust or Explainability issues', 'Training Needs']	Opinion Piece	Primary care physicians, Patients, Researchers, Digital health decisionmakers, Stakeholders with interest in AI	No setting specified	Model not specified	Diagnosis	Hypothetical Only	NA
Held	2022	Health Informatics Journal	['Data Quality Issues', 'Cost', 'Workflow Disruption', 'Training Needs', 'Trust or Explainability issues']	Qualitative	Primary care physicians, Nurses, Stakeholders with interest in AI	In-person clinic	Model not specified	Diagnosis	Empirically Evaluated	Pre-Implementation
Helenason	2024	Scandinavian Journal of Primary Health Care	['Trust or Explainability issues', 'Lack of Integration', 'Training Needs', 'Regulatory/Legal factors']	Mixed Methods	Primary care physicians	In-person clinic	Deep Learning (DL)	Diagnosis	Empirically Evaluated	Pre-Implementation
Hendrix	2021	Journal of the American Medical Informatics Association	['Trust or Explainability issues', 'Regulatory/Legal factors', 'Data Quality Issues', 'Equity & Bias']	Mixed Methods	Primary care physicians, Nurses	No setting specified	Model not specified	Diagnosis	Hypothetical Only	NA
Kueper	2020	Annals of Family Medicine	['Workflow Disruption', 'Trust or Explainability issues', 'Equity & Bias', 'Regulatory/Legal factors']	Review/Evidence Synthesis	Primary care physicians, Nurses, Patients, Researchers	No setting specified	Model not specified	Diagnosis	Hypothetical Only	NA
Kueper		Gray Literature (Conference Submission)	['Data Quality Issues', 'Regulatory/Legal factors', 'Trust or Explainability issues', 'Equity & Bias']	Mixed Methods	Primary care physicians, Patients, Researchers, Digital health decisionmakers, Stakeholders with interest in AI	No setting specified	Model not specified	Risk prediction, Administrative automation	Empirically Evaluated	Pre-Implementation

Escalé-Besa	2023	Scientific Reports	['Data Quality Issues', 'Trust or Explainability issues']	Quantitative (Observational)	Primary care physicians, Patients	Hybrid (in-person + virtual)	Machine Learning (ML)	Diagnosis	Hypothetical Only	NA
Elgin	2024	BMC Medical Ethics	['Equity & Bias', 'Trust or Explainability issues', 'Workflow Disruption', 'Data Quality Issues']	Qualitative	Primary care physicians, Nurses, Digital health decisionmakers, Stakeholders with interest in AI	No setting specified	Clinical Decision Support Systems (CDSS)	Administrative automation	Empirically Evaluated	Pre-Implementation
Dey	2025	Journal of The Association of Physicians of India	['Data Quality Issues', 'Trust or Explainability issues', 'Regulatory/Legal factors', 'Training Needs']	Opinion Piece	Primary care physicians, Patients, Researchers, Digital health decisionmakers, Stakeholders with interest in AI	No setting specified	Model not specified	Diagnosis, Administrative automation	Hypothetical Only	NA
Dehnavieh	2025	BMC Primary Care	['Cost', 'Data Quality Issues', 'Trust or Explainability issues', 'Regulatory/Legal factors']	Review/Evidence Synthesis	Researchers, Stakeholders with interest in AI	No setting specified	Model not specified	No specific task evaluated	Hypothetical Only	NA
De Raeve	2021	Open Research Europe	['Trust or Explainability issues', 'Data Quality Issues', 'Equity & Bias', 'Lack of Integration']	Review/Evidence Synthesis	Nurses, Patients, Caregivers, Researchers, Digital health decisionmakers, Stakeholders with interest in AI, Primary care physicians (included under "multidisciplinary groups of healthcare professionals")	No setting specified	Model not specified	Quality Improvement, Administrative automation.	Hypothetical Only	NA
Davis	2025	Journal of Medical Internet Research	['Data Quality Issues', 'Trust or Explainability issues', 'Patient Acceptability']	Qualitative	Patients	No setting specified	Model not specified	Administrative automation, Quality Improvement	Empirically Evaluated	Pre-Implementation
Darcel	2023	PLoS ONE	['Lack of Integration', 'Data Quality Issues', 'Trust or Explainability issues', 'Equity & Bias']	Qualitative	Patients, Primary care providers, digital health decisionmakers	No setting specified	Model not specified	No specific task	Hypothetical Only	NA
Daines	2024	Journal of Asthma	['Low Usability', 'Workflow Disruption', 'Lack of Integration', 'Trust or Explainability issues']	Qualitative	Primary care physicians, Nurses	In-person clinic	Clinical Decision Support Systems (CDSS)	Diagnosis, Risk prediction	Empirically Evaluated	Pre-Implementation
Daines	2024	npj Primary Care Respiratory Medicine	['Lack of Integration', 'Training Needs', 'Low Usability', 'Trust or Explainability issues']	Mixed Methods	Primary care physicians, Nurses	In-person clinic	Clinical Decision Support Systems (CDSS)	Diagnosis	Empirically Evaluated	Implementation

d'Elia	2022	Family Medicine and Community Health	['Trust or Explainability issues', 'Equity & Bias', 'Regulatory/Legal factors']	Review/Evidence Synthesis	Patients, Stakeholders with interest in AI	No setting specified.	Model not specified	No specific task	Hypothetical Only	NA
Chew	2022	JOURNAL OF MEDICAL INTERNET RESEARCH	['Cost', 'Training Needs', 'Trust or Explainability issues', 'Regulatory/Legal factors']	Review/Evidence Synthesis	Primary care physicians, Nurses, Patients, Caregivers, Researchers, Digital health decisionmakers, Stakeholders with interest in AI	No setting specified.	Model not specified	Diagnosis	Hypothetical Only	NA
Canny	2023	Health Expectations	['Training Needs', 'Trust or Explainability issues', 'Patient Acceptability']	Qualitative	Patients, Caregivers	In-person clinic	Model not specified	Diagnosis	Hypothetical Only	NA
Petersson	2022	BMC Health Services Research	['Regulatory/Legal factors', 'Trust or Explainability issues', 'Training Needs', 'Workflow Disruption']	Qualitative	Digital health decisionmakers, Stakeholders with interest in AI	No setting specified.	Model not specified	Quality Improvement	Empirically Evaluated	Pre-Implementation
Pratt	2022	BMC Medical Informatics and Decision Making	['Workflow Disruption', 'Training Needs', 'Data Quality Issues']	Qualitative	Primary care physicians, Nurses	In-person clinic, Rural/remote care setting	Clinical Decision Support Systems (CDSS)	Quality Improvement	Empirically Evaluated	Implementation
d'Elia	2023	Pre-print	['Equity & Bias', 'Regulatory/Legal factors', 'Workflow Disruption']	Qualitative	Primary care physicians, Patients, Researchers, Digital health decisionmakers, Stakeholders with interest in AI	No setting specified.	Model not specified	No particular task	Empirically Evaluated	Pre-Implementation
Herter	2022	JMIR MEDICAL INFORMATICS	['Workflow Disruption', 'Lack of Integration', 'Low Usability']	Quantitative (Observational)	Primary care physicians, Patients, Stakeholders with interest in AI	In-person clinic	Clinical Decision Support Systems (CDSS), Machine Learning (ML)	Quality Improvement	Empirically Evaluated	Implementation
Ahluwalia	2025	MDM Policy & Practice	['Training Needs', 'Workflow Disruption', 'Trust or Explainability issues', 'Regulatory/Legal factors']	Quantitative (Observational)	Primary care physicians, Family medicine residents,Nurses	In-person clinic , Community health center	Model not specified	Risk prediction	Empirically Evaluated	Pre-Implementation
Al-BIKKALLI	2025	Studies In Health Technology And Informatic	['Workflow Disruption', 'Trust or Explainability issues', 'Data Quality Issues', 'Low Usability']	Quantitative (Observational)	Primary care physicians	In-person clinic.	Model not specified	Quality Improvement.	Empirically Evaluated	Pre-Implementation
Alanzi	2023	Cureus	['Trust or Explainability issues', 'Regulatory/Legal factors', 'Lack of Integration']	Quantitative (Observational)	Primary care physicians	Telemedicine and In-person clinic	Model not specified	Diagnosis.	Empirically Evaluated	Pre-Implementation

Alasiri	2023	Perspectives in Health Informatics and Management	['Workflow Disruption', 'Lack of Integration', 'Trust or Explainability issues']	Review/Evidence Synthesis	Primary care physicians, Patients	Yes, In-person clinic	Clinical Decision Support Systems (CDSS)	Quality Improvement/ risk prediction	Empirically Evaluated	NA
Allen	2024	BMC Primary Care	['Workflow Disruption', 'Equity & Bias', 'Regulatory/Legal factors', 'Trust or Explainability issues']	Mixed Methods	Primary care physicians	Urban academic medical center	Model not specified	No specific task evaluated	Empirically Evaluated	Pre-Implementation
AlSerkal	2025	JMIR Formative Research	['Lack of Integration', 'Workflow Disruption']	Quantitative (Interventional)	Primary care physicians, Nurses, Patients, Researchers, Digital health decisionmakers, Stakeholders with interest in AI	In-person clinic	Machine Learning (ML)	Administrative automation	Empirically Evaluated	Implementation
Alsudairy	2025	Cureus	['Cost', 'Training Needs', 'Trust or Explainability issues', 'Regulatory/Legal factors']	Quantitative (Observational)	Primary care physicians, Nurses, Digital health decisionmakers (as healthcare administrators), Other healthcare professionals (medical assistants)	Hospital-based primary care clinics.	Model not specified	Diagnosis	Empirically Evaluated	Pre-Implementation
Andrew	2024	Fam Med Community Health	['Data Quality Issues', 'Trust or Explainability issues', 'Regulatory/Legal factors', 'Patient Acceptability']	Review/Evidence Synthesis	Primary care physicians, Patients, Researchers, Digital health decisionmakers, Stakeholders with interest in AI	primary care setting	the study is in general about LLM models	Administrative automation, diagnosis.	Hypothetical Only	NA
Armitage	2025	British Journal of General Practice	['Data Quality Issues', 'Workflow Disruption', 'Trust or Explainability issues', 'Training Needs']	Opinion Piece	Primary care physicians	Hybrid (in-person + virtual)	Model not specified	Diagnosis	Hypothetical Only	NA
Armitage	2025	Journal of Evaluation in Clinical Practice	['Lack of Integration', 'Regulatory/Legal factors', 'Trust or Explainability issues', 'Patient Acceptability']	Quantitative (Observational)	Primary care physicians	No setting specified.	LLMs in general	Administrative automation	Empirically Evaluated	Pre-Implementation
Ash	2020	Appl Clin Inform	['Cost', 'Workflow Disruption', 'Data Quality Issues', 'Trust or Explainability issues']	Qualitative	Primary care physicians, Nurses, Digital health decisionmakers, Researchers	Community health center, In-person clinic	Clinical Decision Support Systems (CDSS)	Quality Improvement	Empirically Evaluated	Pre-Implementation
Barry	2022	JMIR AI	['Cost', 'Workflow Disruption', 'Training Needs', 'Lack of Integration']	Qualitative	Primary care physicians, Nurses	In-person clinic	Deep Learning (DL)	Diagnosis	Empirically Evaluated	Pre-Implementation

Beccia	2024	JMIR Formative Research	['Workflow Disruption', 'Low Usability', 'Lack of Integration', 'Patient Acceptability']	Qualitative	Primary care physicians	In-person clinic	Clinical Decision Support Systems (CDSS)	Diagnosis	Empirically Evaluated	Implementation
Bentley	2022	JMIR Formative Research	['Regulatory/Legal factors', 'Data Quality Issues', 'Workflow Disruption', 'Trust or Explainability issues']	Qualitative	Primary care physicians	Urban academic medical center	Model not specified	Risk prediction	Hypothetical Only	NA
Bowman	2024	J Am Board Fam Med	['Data Quality Issues', 'Workflow Disruption', 'Lack of Integration']	Opinion Piece	Primary care physicians, Patients, Researchers, Digital health decisionmakers, Stakeholders with interest in AI	No setting specified.	Model not specified	Administrative automation	Hypothetical Only	NA
Brancaccio	2024	Journal of Investigative Dermatology	['Data Quality Issues', 'Trust or Explainability issues', 'Regulatory/Legal factors', 'Workflow Disruption']	Review/Evidence Synthesis	Primary care physicians, Patients, Researchers, Stakeholders with interest in AI	No setting specified.	Model not specified	Diagnosis	Hypothetical Only	NA
Canaway	2024	BMC Primary Care	['Workflow Disruption', 'Training Needs', 'Lack of Integration']	Mixed Methods	Primary care physicians, Nurses, Researchers, Digital health decisionmakers	In-person clinic, Community health center, Rural/remote care setting.	Clinical Decision Support Systems (CDSS)	Quality Improvement, Diagnosis	Empirically Evaluated	Pre-Implementation
Herter	2022	JMIR Medical Informatics	['Workflow Disruption', 'Lack of Integration', 'Data Quality Issues', 'Low Usability']	Quantitative (Observational)	Primary care physicians, Patients, Researchers, Stakeholders with interest in AI	In-person clinic	Machine Learning (ML), Clinical Decision Support Systems (CDSS)	Risk prediction	Empirically Evaluated	Implementation
Hong	2022	JMIR Formative Research	['Low Usability', 'Trust or Explainability issues', 'Patient Acceptability']	Quantitative (Observational)	Patients	In-person clinic	Natural Language Processing (NLP) , Agentic AI	History and physical	Hypothetical Only	NA
Horwood	2023	BMC Health Services Research	['Training Needs', 'Low Usability', 'Workflow Disruption', 'Lack of Integration']	Mixed Methods	Nurses, Patients, Caregivers	In-person clinic, Community health center, Rural/remote care setting	Clinical Decision Support Systems (CDSS)	Quality Improvement	Empirically Evaluated	Post-Implementation
Huguet	2023	Appl Clin Inform	['Training Needs', 'Low Usability']	Mixed Methods	Primary care physicians, Nurses	Community health center, Rural/remote care setting, Urban academic medical center	Clinical Decision Support Systems (CDSS)	Quality Improvement	Empirically Evaluated	Implementation

Jensen	2022	BMC Pediatrics	['Training Needs', 'Lack of Integration', 'Workflow Disruption']	Mixed Methods	Nurses	In-person clinic, Community health center, Rural/urban/peri-urban	Clinical Decision Support Systems (CDSS)	Quality Improvement	Empirically Evaluated	Implementation
Jensen	2019	Paediatrics and International Child Health	['Training Needs', 'Workflow Disruption', 'Trust or Explainability issues']	Mixed Methods	Nurses, Caregivers	Yes, In-person clinic, Community health center, Primary healthcare clinics.	Clinical Decision Support Systems (CDSS)	Quality Improvement.	Empirically Evaluated	Implementation
Jimenez	2020	JOURNAL OF MEDICAL INTERNET RESEARCH	['Data Quality Issues', 'Patient Acceptability', 'Workflow Disruption', 'Training Needs']	Review/Evidence Synthesis	Primary care physicians	In-person clinic	Model not specified	History and physical, Diagnosis	Hypothetical Only	NA
Jones	2022	The Lancet Digital Health	['Training Needs', 'Trust or Explainability issues', 'Low Usability']	Review/Evidence Synthesis	Primary care physicians and patients	primary care setting	Model not specified	Diagnosis	Hypothetical Only	NA
Jones	2021	JOURNAL OF MEDICAL INTERNET RESEARCH	['Cost', 'Lack of Integration', 'Regulatory/Legal factors', 'Patient Acceptability']	Review/Evidence Synthesis	Patients, Researchers, Digital health decisionmakers, Stakeholders with interest in AI	No setting specified.	Model not specified	Diagnosis	Hypothetical Only	NA
Jones	2025	JMIR Cancer	['Data Quality Issues', 'Trust or Explainability issues', 'Regulatory/Legal factors', 'Low Usability']	Qualitative	Primary care physicians, Nurses, Patients, Researchers, Stakeholders with interest in AI	No setting specified.	Model not specified	Diagnosis	Hypothetical Only	NA
Jørgensen	2025	JMIR Medical Informatics	['Cost', 'Workflow Disruption', 'Trust or Explainability issues', 'Regulatory/Legal factors']	Qualitative	Primary care physicians (General Practitioners)	In-person clinic.	Model not specified	Diagnosis	Hypothetical Only	NA
Kasap	2024	The Journal of Turkish Family Physician	['Data Quality Issues', 'Trust or Explainability issues', 'Lack of Integration', 'Cost', 'Training Needs', 'Regulatory/Legal factors', 'Patient Acceptability']	Review/Evidence Synthesis	Primary care physicians, Patients, Caregivers, Researchers, Stakeholders with interest in AI	No setting specified.	Model not specified	Diagnosis, Risk prediction, Administrative automation.	Hypothetical Only	NA
Katsakiori	2024	Cureus	['Training Needs', 'Trust or Explainability issues', 'Regulatory/Legal factors', 'Equity & Bias']	Review/Evidence Synthesis	Primary care physicians, Patients, Stakeholders with interest in AI	No setting specified.	Model not specified	Diagnosis	Hypothetical Only	NA
Khan	2024	Cureus	['Data Quality Issues', 'Lack of Integration', 'Equity & Bias', 'Regulatory/Legal factors']	Opinion Piece	Primary care physicians, Patients, Stakeholders	No setting specified.	Model not specified	Quality Improvement	Hypothetical Only	NA

					with interest in AI					
Kocaballi	2020	Journal of the American Medical Informatics Association	['Training Needs', 'Data Quality Issues', 'Trust or Explainability issues', 'Regulatory/Legal factors', 'Equity & Bias']	Qualitative	Primary care physicians	In-person clinic Telemedicine and Home-based care	Model not specified	Administrative automation.	Hypothetical Only	NA
Koch	2025	JMIR Formative Research	['Trust or Explainability issues', 'Lack of Integration', 'Patient Acceptability', 'Low Usability']	Qualitative	Patients	In-person clinic	Model not specified	Diagnosis	Empirically Evaluated	Implementation
Qin	2025	Journal of Primary Care & Community Health	['Trust or Explainability issues', 'Data Quality Issues', 'Equity & Bias', 'Regulatory/Legal factors']	Review/Evidence Synthesis	Primary care physicians, Nurses, Patients, Caregivers, Researchers, Digital health decisionmakers, Stakeholders with interest in AI	No setting specified	Model not specified	Diagnosis, Risk prediction	Hypothetical Only	NA
Razai	2024	PLOS ONE	['Workflow Disruption', 'Training Needs', 'Trust or Explainability issues', 'Data Quality Issues']	Qualitative	Primary care physicians	Hybrid (in-person + virtual)	Model not specified	Diagnosis	Hypothetical Only	Pre-Implementation
Rubin	2021	BMJ Open	['Lack of Integration', 'Low Usability', 'Workflow Disruption', 'Data Quality Issues']	Mixed Methods	Primary care physicians, Patients, Researchers	In-person clinic, Rural/remote care setting.	Clinical Decision Support Systems (CDSS)	Diagnosis	Empirically Evaluated	Implementation
Schmitz	2022	BMJ Open	['Training Needs']	Quantitative (Observational)	Patients, Caregivers, Researchers, Primary care physicians	Rural/remote care setting, Community health center	Clinical Decision Support Systems (CDSS)	Diagnosis, Quality Improvement	Hypothetical Only	NA
Schütze	2023	BMC Medical Informatics and Decision Making	['Cost', 'Workflow Disruption', 'Low Usability', 'Lack of Integration', 'Trust or Explainability issues']	Qualitative	Primary care physicians	In-person clinic	Model not specified	Diagnosis, Risk prediction, Quality Improvement, Administrative automation, History and physical	Hypothetical Only	Pre-Implementation
Scipion	2025	BMJ Open	['Workflow Disruption', 'Training Needs', 'Trust or Explainability issues', 'Regulatory/Legal factors']	Review/Evidence Synthesis	Primary care physicians, Nurses	No setting specified.	Model not specified	Diagnosis, Risk prediction, History and physical.	Hypothetical Only	NA
Seol	2021	PLOS ONE	['Cost', 'Workflow Disruption', 'Trust or Explainability issues', 'Lack of Integration']	Quantitative (Interventional)	Primary care physicians, Patients, Caregivers	Yes, In-person clinic.	Machine Learning (ML), Natural Language Processing (NLP), Clinical Decision Support Systems (CDSS)	Quality Improvement	Empirically Evaluated	Implementation

Shah	2025	JAMA Network Open	['Lack of Integration', 'Data Quality Issues', 'Patient Acceptability', 'Workflow Disruption']	Qualitative	Primary care physicians	In-person clinic	Large language models (LLMs)	Administrative Automation	Empirically Evaluated	Implementation
Sharma	2023	JMIR Preprints (The document is a preprint for JMIR Publications)	['Low Usability', 'Lack of Integration', 'Data Quality Issues', 'Trust or Explainability issues']	Qualitative	Primary care physicians	In-person clinic	Clinical Decision Support System (CDSS)	Quality Improvement	Empirically Evaluated	Pre-Implementation
Shour	2023	BMC Health Services Research	['Workflow Disruption', 'Patient Acceptability']	Quantitative (Observational)	Patients, Primary care physicians	Rural/remote care setting	Machine Learning (ML)	Risk prediction	Empirically Evaluated	Post-Implementation
Siira	2025	JOURNAL OF MEDICAL INTERNET RESEARCH	['Lack of Integration', 'Data Quality Issues', 'Trust or Explainability issues', 'Regulatory/Legal factors']	Review/Evidence Synthesis	Primary care physicians, Nurses, Patients, Researchers	No setting specified	Model not specified	History and Physical, Risk prediction	Empirically Evaluated	NA
Siira	2024	BMC Primary Care	['Training Needs', 'Lack of Integration', 'Trust or Explainability issues', 'Patient Acceptability']	Qualitative	Primary care physicians, Nurses, Digital health decisionmakers, Stakeholders with interest in AI	Hybrid (in-person + virtual)	CDSS(based on a Bayesian network framework)	History and physical, Risk Prediction	Empirically Evaluated	Post-Implementation
Singareddy	2023	Cureus	['Data Quality Issues', 'Trust or Explainability issues', 'Regulatory/Legal factors', 'Equity & Bias']	Review/Evidence Synthesis	Primary care physicians, Patients, Researchers	Community health center, Home-based care	Model not specified	Quality Improvement	Empirically Evaluated	NA
Smak Gregoor	2023	eClinicalMedicine (The Lancet)	['Low Usability', 'Patient Acceptability', 'Trust or Explainability issues', 'Workflow Disruption']	Mixed Methods	Primary care physicians, Patients, Researchers	Home-based care, Hybrid	Deep Learning (DL)	Diagnosis, Risk prediction	Empirically Evaluated	Implementation
Steerling	2025	Frontiers in Digital Health	['Trust or Explainability issues', 'Patient Acceptability', 'Data Quality Issues', 'Workflow Disruption']	Qualitative	Primary care physicians, Nurses, Patients	In-person clinic, Rural/remote care setting	CDSS , Bayesian network	History and physical, Risk Prediction	Empirically Evaluated	Post-Implementation
Šteinmiller	2024	DIGITAL HEALTH	['Data Quality Issues', 'Trust or Explainability issues', 'Low Usability', 'Workflow Disruption']	Qualitative	Primary care physicians	No setting specified	Clinical Decision Support Systems (CDSS)	Quality Improvement	Empirically Evaluated	Post-Implementation
Stroud	2025	JMIR MENTAL HEALTH	['Trust or Explainability issues', 'Workflow Disruption', 'Data Quality Issues', 'Regulatory/Legal factors']	Qualitative	Primary care physicians	No setting specified	Model not specified	Diagnosis, Administrative automation.	Empirically Evaluated	Pre-Implementation
Sunjaya	2022	MEDINFO 2021 (IMIA and IOS Press)	['Low Usability', 'Lack of Integration', 'Workflow Disruption', 'Training Needs']	Mixed Methods	Primary care physicians	No setting specified	Clinical Decision Support Systems (CDSS)	Diagnosis	Empirically Evaluated	Pre-Implementation
Tegenaw	2023	BMC Medical Informatics and Decision Making	['Training Needs', 'Low Usability', 'Data Quality Issues', 'Lack of Integration']	Mixed Methods	Nurses, Caregivers	Community health center, In-person clinic	Clinical Decision Support Systems (CDSS)	Diagnosis, Risk prediction	Empirically Evaluated	Implementation

Terry	2022	BMC Medical Informatics and Decision Making	['Data Quality Issues', 'Trust or Explainability issues', 'Regulatory/Legal factors', 'Data Privacy']	Qualitative	Researchers, Digital health decisionmakers, Stakeholders with interest in AI	No setting specified	Model not specified	Risk prediction, Quality Improvement, Administrative automation	Empirically Evaluated	Pre-Implementation
Thirunavukarasu	2023	JMIR Medical Education	['Workflow Disruption', 'Data Quality Issues', 'Data Privacy']	Quantitative (Observational)	Researchers	No setting specified	Deep Learning-Natural Language Processing (NLP)	Knowledge Assessment, Medical Examination	Empirically Evaluated	Pre-Implementation
Thomsen	2025	International Journal of Medical Informatics	['Low Usability', 'Workflow Disruption', 'Lack of Integration']	Mixed Methods	Primary care clinicians, Researchers, Stakeholders with interest in AI, Nurses	In-person clinic	Clinical Decision Support Systems (CDSS)	Quality Improvement	Empirically Evaluated	Implementation
Upshaw	2023	J Am Board Fam Med	['Workflow Disruption', 'Training Needs', 'Data Quality Issues', 'Equity & Bias']	Qualitative	Primary care physicians, Nurses, Patients, Digital health decisionmakers, Stakeholders with interest in AI	No setting specified	Model not specified	Administrative automation, Risk prediction	Empirically Evaluated	Pre-Implementation
Ursin	2021	Frontiers in Medicine	['Trust or Explainability issues', 'Equity & Bias', 'Regulatory/Legal factors']	Review/Evidence Synthesis	Primary care physicians, Patients, Researchers	In-person clinic	Model not specified	Diagnosis	Other/Unclassified	NA
Vidal-Alaball	2023	Elsevier	['Training Needs', 'Equity & Bias', 'Trust or Explainability issues']	Mixed Methods	Primary care physicians, Researchers, Stakeholders with interest in AI	No setting specified	Model not specified	Diagnosis., Debureaucratization	Empirically Evaluated	Pre-Implementation
Waheed	2024	JMIR AI	['Training Needs', 'Patient Acceptability', 'Trust or Explainability issues']	Quantitative (Observational)	Primary care physicians, Stakeholders with interest in AI	In-person clinic	Model not specified	Quality Improvement and Administrative automation.	Empirically Evaluated	Pre-Implementation
Wang	2024	eBioMedicine	['Data Quality Issues', 'Trust or Explainability issues', 'Regulatory/Legal factors']	Quantitative (Observational)	Patients, Researchers	In-person clinic	Deep Learning (DL)	Diagnosis	Empirically Evaluated	Implementation
Wewetzer	2023	Digital Health	['Cost', 'Lack of Integration', 'Low Usability', 'Regulatory/Legal factors', 'Patient Acceptability']	Quantitative (Observational)	Primary care physicians	In-person clinic	Model not specified	Diagnosis	Empirically Evaluated	Pre-Implementation
Wiedermann	2023	Journal of Personalized Medicine	['Workflow Disruption', 'Trust or Explainability issues', 'Patient Acceptability']	Mixed Methods	Primary care physicians, Patients	In-person clinic	chatbot-based symptom checker	History and physical	Empirically Evaluated	Implementation
Willis	2020	BMJ Open	['Cost', 'Workflow Disruption', 'Training Needs']	Mixed Methods	Primary care physicians, Nurses, Caregivers,	In-person clinic, Rural/remote care setting	machine learning model	Administrative automation	Hypothetical Only	NA

					Researchers, Stakeholders with interest in AI	Community health center				
Witkowski	2024	BMC Medical Ethics	['Trust or Explainability issues', 'Patient Acceptability', 'Cost', 'Equity & Bias']	Mixed Methods	Patients	No setting specified	Model not specified	Administrative automation.	Empirically Evaluated	Pre-Implementation
Wojda	2024	This document is a chapter within the book "Artificial Intelligence in Medicine and Surgery – An Exploration of Current Trends, Potential...", published by IntechOpen. It is not a journal article	['Training Needs', 'Trust or Explainability issues', 'Regulatory/Legal factors', 'Equity & Bias']	Review/Evidence Synthesis	Primary care physicians, Patients, Caregivers, Researchers, Digital health decisionmakers, Stakeholders with interest in AI	Yes, Multiple settings	Model not specified	Diagnosis, Risk prediction	Empirically Evaluated	NA
Young	2023	Journal of the American Board of Family Medicine (JABFM)	['Data Quality Issues', 'Trust or Explainability issues', 'Equity & Bias', 'Regulatory/Legal factors']	Opinion Piece	Researchers, Primary care physicians	No setting specified	Model not specified	Diagnosis, Risk prediction, Administrative automation.	Hypothetical Only	NA
Zhou	2025	BMC Medical Education	['Data Quality Issues', 'Trust or Explainability issues']	Quantitative (Observational)	Primary care physicians	No setting specified	ChatGPT, Deep Learning, Natural Language Processing	Diagnosis	Empirically Evaluated	Pre-Implementation
Al-qudimat	2025	Health Science Reports	Training Needs, Trust or Explainability issues, Regulatory/Legal factors, Equity & Bias	Quantitative – Observational	Primary care physicians, Nurses, Researchers, Digital health decisionmakers, Stakeholders with interest in AI	No setting specified	Model not specified	Administrative automation	Hypothetical Only	Not Applicable
Alanazi	2025	Healthcare	Cost, Training Needs, Low Usability, Lack of Integration	Qualitative	Patients	No setting specified	Model not specified	Quality Improvement	Empirically Evaluated	Pre-implementation
Ganapathi	2025	Frontiers in Medicine	Cost, Workflow Disruption, Training Needs, Trust or Explainability issues	Qualitative	Primary care physicians, Nurses	In-person clinic	Machine Learning	Diagnosis	Empirically Evaluated	Pre-implementation
Kowalewska	2025	Journal of Medical Internet Research	Data Quality Issues, Training Needs, Trust or Explainability issues	Mixed Methods	Primary care physicians, Patients, Researchers, Digital health decisionmakers	Hybrid (in-person + virtual)	CDSS	Quality Improvement	Hypothetical Only	Not Applicable
Krogh	2024	BMC Health Services Research	Cost, Training Needs, Peer or Leadership Influence	Qualitative	Primary care physicians, Nurses, Stakeholders with interest in AI	No setting specified	Model not specified	Not specified	Empirically Evaluated	Pre-implementation

Lowe	2024	JMIR Human Factors	Workflow Disruption, Lack of Integration, Patient Acceptability	Qualitative	Primary care physicians	In-person clinic, Rural/remote care setting	Model not specified	Diagnosis	Empirically Evaluated	Pre-implementation
Preiser	2023	PLoS One	Regulatory/Legal factors, Lack of Integration, Training Needs, Trust or Explainability issues	Qualitative	Primary care physicians, Researchers, Stakeholders with interest in AI	No setting specified	Model not specified	Not specified	Empirically Evaluated	Pre-implementation
Yousif	2025	BMC Health Serv Res	Training Needs, Trust or Explainability Issues, Regulatory/Legal Factors, Equity & Bias	Mixed Methods	Primary care physicians, Stakeholders with interest in AI	No setting specified	Model not specified	Diagnosis	Empirically Evaluated	Pre-implementation
Medina-lara	2020	Health technology assessment	Training Needs, Workflow Disruption, Low Usability, Trust or Explainability issues	Mixed Methods	Primary care physicians, Researchers, Digital health decisionmakers, Stakeholders with interest in AI	In-person clinic	Model not specified	Diagnosis	Empirically Evaluated	Post-Implementation
Elliott	2022	Medical Decision Making	Workflow Disruption, Low Usability, Training Needs, Others	Quantitative (Interventional)	Primary care physicians	Rural/remote care setting	Clinical Decision Support Systems (CDSS)	Quality Improvement	Empirically Evaluated	Post-Implementation
Sides	2023	Preprint	Cost, Training Needs, Trust or Explainability issues, Regulatory/Legal factors	Mixed Methods	Primary care physicians, Nurses, Digital health decisionmakers, Stakeholders with interest in AI	No setting specified	Model not specified	Administrative automation	Empirically Evaluated	Pre-Implementation
Mwogosi	2024	Transforming Government People, Process and Policy	Cost, Trust or Explainability issues, Regulatory/Legal factors, Equity & Bias	Qualitative study	Primary care physicians, Nurses, Stakeholders with interest in AI	Community health center, Rural/remote care setting	Model not specified	Quality Improvement, Administrative automation	Hypothetical Only	Pre-Implementation
Hamari	2023	JBI Evidence Implementation	Training Needs, Low Usability, Lack of Integration, Data Quality Issues	Quantitative (Observational)	Nurses	Community health center	Clinical Decision Support Systems (CDSS)	Quality Improvement	Empirically Evaluated	Pre-Implementation
Petersen	2025	Canadian Journal of Diabetes	Cost, Data Quality Issues, Trust or Explainability issues, Patient Acceptability	Qualitative	Primary care physicians, Patients, Researchers	No setting specified	Model not specified	Diagnosis	Hypothetical Only	Pre-Implementation

Exclusions with reasons

Authors	Year	Journal	Title	TiAb Screening	FT screening	Reason For Exclusion
Abdulazeem	2025	International journal of medical informatics	Knowledge, attitude, and practice of primary care physicians toward clinical AI-assisted digital health technologies: Systematic review and meta-analysis.	1	0	systematic review with No particular focus on primary care
Abuzour	2024	PLoS one	A qualitative exploration of barriers to efficient and effective structured medication reviews in primary care: {Findings} from the {DynAIRx} study.	1	0	Tool not explicitly described as AI, SMR is not meant to mean Artificial Intelligence
Breitbart	2020	PLoS one	Improved patient satisfaction and diagnostic accuracy in skin diseases with a Visual Clinical Decision Support System-A feasibility study with general practitioners.	1	0	No barriers to implementation mentioned or evaluated
Chandramohan	2024	The Lancet regional health. Southeast Asia	Teleradiology and technology innovations in radiology: status in India and its role in increasing access to primary health care.	1	0	No primary focus on "AI" tools, No barriers to implementation mentioned or evaluated(that too hypothecically mentioned),
Delory	2020	The Journal of antimicrobial chemotherapy	A computerized decision support system (CDSS) for antibiotic prescription in primary care-Antibioclic: implementation, adoption and sustainable use in the era of extended antimicrobial resistance.	1	0	Pre-print/Unpublished manuscript.
Finkelstein	2024	Journal of medical systems	Identifying Facilitators and Barriers to Implementation of AI-Assisted Clinical Decision Support in an Electronic Health Record System.	1	0	No focus on primarry care, Study involved hospitalized patients only.
Francisco	2024	JMIR research protocols	An Approach to Potentially Increasing Adoption of an Artificial Intelligence-Enabled Electronic Medical Record Encounter in Canadian Primary Care: Protocol for a User-Centered Design.	1	0	Protocol of a study with no priliminary resutls
Gomez-Cabello	2024	European journal of investigation in health, psychology and education	Artificial-Intelligence-Based Clinical Decision Support Systems in Primary Care: A Scoping Review of Current Clinical Implementations.	1	0	No focus on primary care, Scoping review with not much focus on primary care
Gomez-Cabello	2024	European journal of investigation in health, psychology and education	Artificial-{Intelligence}-{Based} {Clinical} {Decision} {Support} {Systems} in {Primary} {Care}: {A} {Scoping} {Review} of {Current} {Clinical} {Implementations}.	1	0	Duplicate record
Harry	2020	BMC medical informatics	Pre-implementation adaptation of primary care cancer prevention clinical decision support in a predominantly rural healthcare system.	1	0	Tool not explicitly described as AI,CDS is not explicitely mentioned as an "AI" or related model.

		and decision making				
Hassan	2024	JMIR Human Factors	Barriers to and {Facilitators} of {Artificial} {Intelligence} {Adoption} in {Health} {Care}: {Scoping} {Review}	1	0	No focus on primarry care,Scoping review with no particular focus on primary care
Liu	2020	Journal of medical Internet research	A COVID-19 Risk Assessment Decision Support System for General Practitioners: Design and Development Study.	1	0	No barriers to implementation mentioned or evaluated
Lu C	2021	Acta Academiae Medicinae Sinicae	[Stakeholder Analysis of the Application of Artificial Intelligence in the Field of Primary Health Care]	1	0	Not in english language
Madar R	2021	Journal of Medical Internet Research	A Web Interface for Antibiotic Prescription Recommendations in Primary Care: User-Centered Design Approach	1	0	Tool not explicitly described as AI,Describes a web-interface but no explicit mention of ML or AI used anywhere
Mayer MA.	2023	Atencion Primaria	[Artificial intelligence in primary care: A scenario of opportunities and challenges]	1	0	Not in english language
Nguyen H	2022	Journal of Medical Internet Research	Triage Errors in Primary and Pre-Primary Care	1	0	Tool not explicitly described as AI,The study talks about triage errors in primary care but mentions that they are due to "digitial symptom checker" . No particular reference the checkers being machine learning based or rule-based or anything
Sanchis MJ	2025	BMJ Evidence-Based Medicine	Perspectives of clinicians and screening candidates on shared decision-making in prostate cancer screening with the prostate-specific antigen (PSA) test: a qualitative study (PROSHADE study)	1	0	No primary focus on "AI" tools, The study focuses on shared decision-making (SDM) in prostate cancer screening using the PSA test and does not mention or discuss artificial intelligence (AI) or its implementation.
Tahir	2024	BMJ open	Protocol of digital decision support system (DDSS) embedded within a tele-primary healthcare platform in Pakistan: an assessment of usability, acceptability, effectiveness and perceived quality of care in a resource-constrained setting.	1	0	Protocol of a study with no priliminary resutls
Agarwal S	2021	Cochrane Database Syst Rev	Decision-support tools via mobile devices to improve quality of care in primary healthcare settings	1	0	the CDSS tool was not defined as being machine learrning based
Mwogosi	2024	Journal of health organization and management	Effectiveness of EHR systems on decision support in primary healthcare: a technology acceptance model 3 perspective.	1	0	Article mentions about EHR as a whole with no emphasis on CDSS.

Kottler	2020	Journal of the American College of Radiology : JACR	Artificial Intelligence: A Private Practice Perspective.	1	0	No particular focus on primary care
Chima	2024	Family practice	Adoption, acceptance, and use of a decision support tool to promote timely investigations for cancer in primary care.	1	0	CDSS was not based on machine learning or any prediction model
Macke	2022	American journal of medical quality : the official journal of the American College of Medical Quality	EHR-Integrated Clinical Pathways Promote Education, Confidence, and Save Time for Primary Care Providers.	1	0	CDSS was not based on machine learning or any prediction model
Shi, Xiulin	2023	Annals of internal medicine	Comparative Effectiveness of Team-Based Care With and Without a Clinical Decision Support System for Diabetes Management : A Cluster Randomized Trial.	1	0	No barriers to AI implementation discussed.
Kassab	2024	American journal of preventive medicine	Accuracy of Online Artificial Intelligence Models in Primary Care Settings.	1	0	Does not implement the tools. Evaluates them in answering questions.
Hassan	2024	Primary care diabetes	Association of collaborative care intervention features with depression and metabolic outcomes in the INDEPENDENT study: A mixed methods study.	1	0	Tool was not based on machine learning or any prediction model
Terry, Amanda	2022	Annals of family medicine	Is primary health care ready for artificial intelligence? Stakeholder perspectives: Worth the risk as long as you do it well.	1	0	Conference abstract that was already included under a different name

Figure S1 Record relevance density.

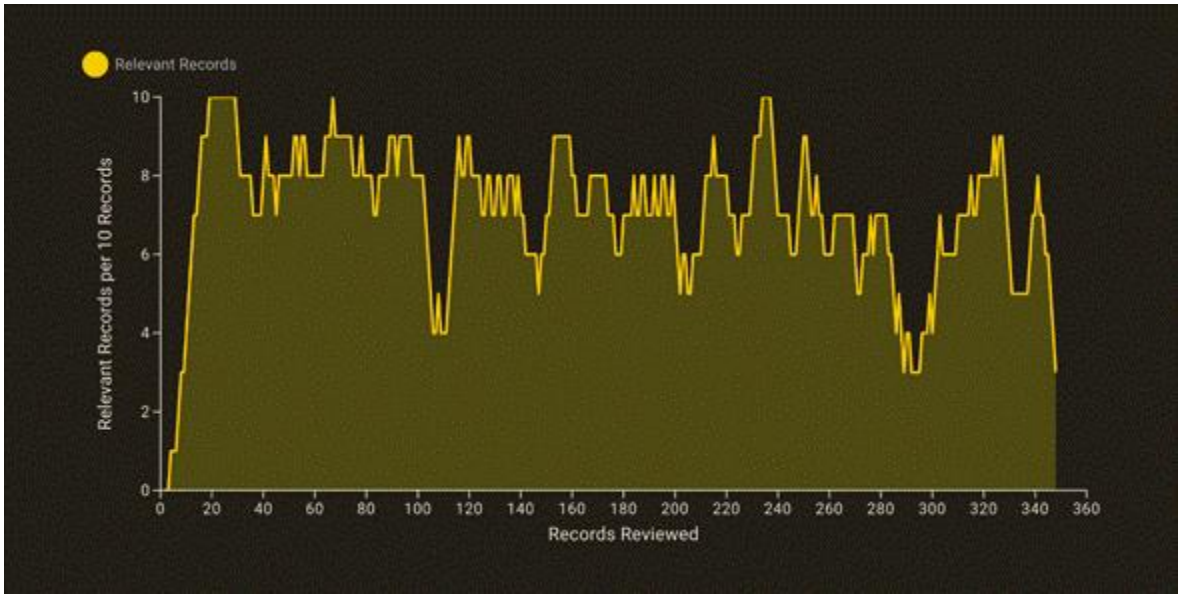
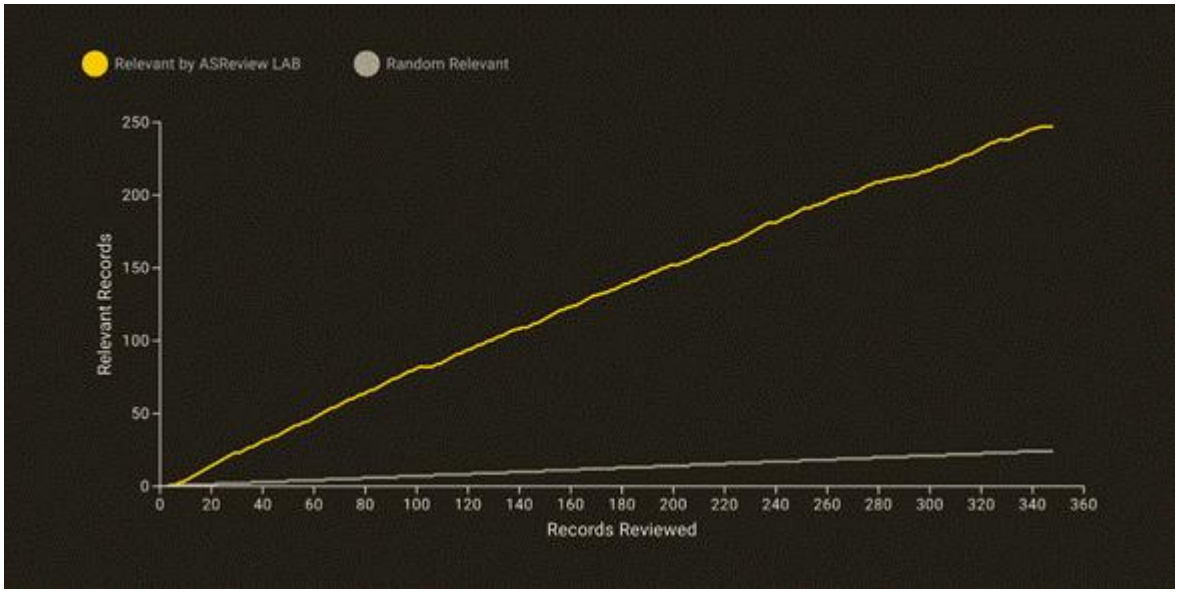


Figure S2 Cumulative recall yield.



Prompts for Extraction

What is the last name of the first author?

Authors What is the publication year?

What is the name of the Journal?

DOI

What is the country/province of the article?

Does the study mention barriers to AI implementation? (Yes/No)

What barriers to AI implementation are discussed in the study? Choose the best descriptors that apply: Cost, Workflow Disruption, Training Needs, Low Usability, Lack of Integration, Data Quality Issues, Trust or Explainability issues, Regulatory/Legal factors, Patient Acceptability, Equity & Bias, Peer or Leadership Influence, Other

Does the study empirically evaluate the implementation of an AI method? If yes, please mention which, Machine Learning (ML), Deep Learning (DL), Natural Language Processing (NLP), Clinical Decision Support Systems (CDSS), Retrieval-Augmented Generation (RAG), Agentic AI, Hybrid Model, Model Not Specified.

Does the study evaluate a particular primary care setting, if yes please mention which: In-person clinic, Telemedicine, Hybrid (in-person + virtual), Home-based care, Community health center, Rural/remote care setting, No setting specified.

What was the primary task the AI was designed to support in the study? Choose the best descriptor from the following: Diagnosis, Risk prediction, Quality Improvement, Administrative automation, History and physical

Who does the study include? Choose one or more descriptors from: Primary care physicians, Nurses, Patients, Caregivers, Researchers, Digital health decision-makers, Stakeholders with interest in AI.

What is the type of study? Choose the descriptor(s): Opinion piece, Review/Evidence synthesis, Qualitative, Quantitative – Observational, Quantitative – Interventional, Mixed Methods. Please explain your answer in a sentence. If unclear, write "Not Specified".

Are barriers empirically evaluated or only mentioned hypothetically? (Choose: Empirically Evaluated / Hypothetical Only / Not Sure)

Phase of implementation