Table 2, Chapter 35. Summary of randomized trials

| **Author** | | **Diagnostic Error** | **Type of Intervention** | **Experimental Intervention** | **Compared intervention** | **Description of Outcome** | **Effect Size (95% CI)**5F**[[1]](#footnote-1)** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Diagnostic Accuracy Outcome** | | | | | | | |
| Attard, 1992([72](#_ENREF_72)) | | Incorrect diagnosis in patients presenting with abdominal pain | T | Pain relief with papaveretum for acute abdominal pain | Placebo | Wrong Diagnosis | 0.22 (0.05-0.98) |
| Thomas, 2003([26](#_ENREF_26)) | | Diagnostic errors based on altered physical examination findings | T | Morphine sulfate administered for pain during diagnostic process | Placebo | Diagnostic accuracy (based on information from follow-up visits/hospital discharges) | 0.96 (0.73-1.27) |
| Hewett, 2010([78](#_ENREF_78)) | | Missed colorectal adenoma diagnosis in colonoscopy | T | Cap-fitted colonoscopy (allows for flattening of haustral folds and/or improves mucosal exposure) | Regular high resolution colonoscopy | Missed adenoma diagnoses (per adenomas) | 0.63 (0.41-0.99) |
| McCarthy, 1990([86](#_ENREF_86)) | | Incorrect diagnosis by parents of symptoms of serious illness | EI | Teaching parents an Acute Illness Observation Scale (AIOS) to detect child’s serious illness | 3-point global scoring system for evaluating the chance of serious illness | False positives | 0.24 (*P* < 0.0001) |
| False negatives | 1.78 (not statistically significant ) |
| Klassen, 1993([92](#_ENREF_92)) | | Missed positive radiographic findings (fracture, dislocation or effusion) after trauma | SPC | Triage nurses using the Brand protocol (for ordering X-rays of injured extremities) in the pediatric emergency department | Physicians carrying out standard procedures | Patients with false negative radiograph interpretations | 33.33 (2.01-554.09) |
| Wellwood, 1992([104](#_ENREF_104)) | | Misdiagnosis of appendicitis | TBS | Diagnostic aid with a standardized data collection form for abdominal pain interpretation | No diagnostic aid | Diagnostic accuracy for appendicitis | *P* = 0.66 |
| Diagnostic aid with a standardized data collection form and computer-aided diagnostic tool for abdominal pain interpretation | Standardized data collection forms only | Diagnostic accuracy for appendicitis | *P* = 0.66 |
| Bogusevicius, 2002([27](#_ENREF_27)) | | Missed acute mechanical small bowel obstruction | TBS | Computer-aided diagnosis for diagnosis of acute mechanical small bowel obstruction (SBO) | Contrast radiography | False positives for complete SBO6F[[2]](#footnote-2) | Relative risk could not be calculated (0 events) |
| False negatives for complete SBO | 0.54 (0.11-2.77) |
| False positives for partial SBO | 0.54 (0.11-2.77) |
| False negatives for SBO | Relative risk could not be calculated (0 events) |
| **Further Diagnostic Test Use Outcome** | | | | | | | | |
| Sakr, 1999([37](#_ENREF_37)) | Clinically important errors, including errors in the diagnosis pathway (i.e., history, physical examination, and radiographic interpretation errors) | PC | Use of nurse practitioner in providing care in the emergency department | Use of junior doctors in the emergency department | Inappropriate radiologic follow-up (unnecessary request or failure to request) | 0.94 (0.75-1.18) |
| Klassen, 1993([92](#_ENREF_92)) | Missed positive radiographic findings (fracture, dislocation or effusion) after trauma | SPC | Triage nurses using the Brand protocol (for ordering X-rays of injured extremities) in the pediatric emergency department | Physicians carrying out standard procedures | Patients with radiographs ordered | 0.94 (0.75-1.18) |
| McPhee, 1989([62](#_ENREF_62)) | Missed cancer diagnosis | ARM, EI, and TBS | Computer generated list of overdue tests at patients’ visits (cancer screening reminders) | No intervention | Further cancer screening (Results given as post-intervention compliance scores relative to standards according to the American Cancer Society recommendations) | Statistically significant7F[[3]](#footnote-3) |
| Audit with feedback | No intervention | Further cancer screening (results given as post-intervention compliance scores relative to standards according to the American Cancer Society recommendations) | Statistically significant 8F[[4]](#footnote-4) |
| Patient education | No intervention | Further cancer screening (results given as postintervention compliance scores relative to standards according to the American Cancer Society recommendations) | Statistically significant 9F[[5]](#footnote-5) |
| **Therapeutic Use Outcome** | | | | | | | |
| Attard, 1992([72](#_ENREF_72)) | Incorrect diagnosis in patients presenting with abdominal pain | T | Pain relief with papaveretum for acute abdominal pain | Placebo | Inappropriate management (surgery or patient observation) | 0.22 (0.05-0.98) |
| Thomas, 2003([26](#_ENREF_26)) | Diagnostic errors based on altered physical examination findings | T | Morphine sulfate administered for pain during diagnostic process | Placebo | Admissions for observation or discharge home | *P* = 0.50 |
| Surgeries | *P* = 0.51 |
| Repeat physician visit for abdominal pain within 7 days | 2.84 (0.31-26.08) |
| Possible incorrect surgical management | 2.84 (0.31-26.08) |
| Kuperman, 1999([28](#_ENREF_28)) | Delays between laboratory results and clinical action | TBS | Computer system to detect critical laboratory conditions and notify the physician via Hospital’s paging system | No automatic notification for alerts | Time to appropriate treatment | *P* = 0.003 |
| Sakr, 1999([37](#_ENREF_37)) | Clinically important errors, including errors in the diagnosis pathway (i.e., history, physical examination, and radiographic interpretation errors) | PC | Use of nurse practitioner in providing care in the emergency department | Use of Junior Doctors in the emergency department | Unplanned follow-up visits | 0.65 (0.45-0.96) |
| Wellwood, 1992([104](#_ENREF_104)) | Misdiagnosis of appendicitis | TBS | Diagnostic aid with a Standardized data collection form for abdominal pain interpretation | No diagnostic aid | Admissions | 0.91 (0.84-0.99) |
| Surgeries | 0.98 (0.82-1.16) |
| Diagnostic aid with a Standardized data collection form + computer-aided diagnostic tool for abdominal pain interpretation | Standardized data collection forms only | Admissions | 1.01 (0.91-1.12) |
| Surgeries | 1.09 (0.90-1.32) |
| Rollman, 2002([38](#_ENREF_38)) | Missed depression diagnosis | SPC and TBS | Active care: Primary care providers (PCPs) were exposed to advisory messages on the paper encounter-based upon AHCPR’s guidelines AND advise to click on the computer desk top icon to obtain further treatment advise from the EMR intranet site | Passive care: PCPs provided with a reminder of their patients’ depression dx on the paper encounter form to treat depressive episodes, but offered no details on how to do so | PCP counsels patient for depression | 1.25 (0.67-2.33) |
| Mental health referral suggested | 0.74 (0.45-1.23) |
| Antidepressant medications prescribed | 1.25 (0.67-2.33) |
| Passive care: PCPs provided with a reminder of their patients’ depression diagnosis on the paper encounter form to treat depressive episodes, but offered no details on how to do so | Usual care | PCP counsels patient for depression | 0.95 (0.49-1.87) |
| Mental health referral suggested | 1.01 (0.64-1.59) |
| Antidepressant medications prescribed | 0.95 (0.49-1.87) |
| Active care: PCPs were exposed to advisory messages on the paper encounter-based upon AHCPRs guidelines AND advise to click on the computer desk top icon to obtain further treatment advise from the EMR intranet site | Usual care | PCP counsels patient for depression | 1.19 (0.63-2.25) |
| Mental health referral suggested | 0.75 (0.44-1.25) |
| Antidepressant medications prescribed | 1.19 (0.63-2.25) |
| **Patient Outcomes** | | | | | | | |
| Sakr, 1999([37](#_ENREF_37)) | Clinically important errors, including errors in the diagnosis pathway (i.e., history, physical examination, and radiographic interpretation errors) | PC | Use of nurse practitioner in providing care in the emergency department | Use of junior doctors in the emergency department | Non improvement in condition | 0.94 (0.68-1.30) |
| Bogusevicius, 2002([27](#_ENREF_27)) | Missed acute mechanical small bowel obstruction | TBS | Computer-aided diagnosis for diagnosis of acute mechanical small bowel obstruction | Contrast radiography | Mortality | 5 (0.25-100.97) |
| Morbidity outcome | 1.33 (0.32-5.58) |
| Fitzgerald, 2011([34](#_ENREF_34)) | Errors during reception and resuscitation of severely injured adult trauma patients (including errors in the diagnosis pathway) | TBS | Real time computer-prompted evidence-based decision support system (with decision and action algorithms) during reception and resuscitation of severely injured adults in Level I adult trauma center | Control (without computer-aided decision support system) | Error rate | 0.89 (0.79-1.00) |
| Morbidity from shock management | *P* = 0.03 |
| Aspiration pneumonia | *P* = 0.046 |
| Sepsis | Not statistically significant |
| ARDS (acute respiratory distress syndrome) | Not statistically significant |
| Functional independence measure score | Not statistically significant |
| Hospital length of stay | Not statistically significant |
| Transfusion of blood productions | *P* < 0.001 |
| Mortality | 1.15 (0.65-2.03) |
| Kuperman, 1999([28](#_ENREF_28)) | Delays between laboratory results and clinical action | TBS | Computer system to detect critical laboratory conditions and notify the physician via hospital’s paging system | No automatic notification for alerts | Time to resolution of alerting conditions | *P* = 0.11 |
| Adverse events | *P* = 0.41 |
| Rollman, 2002([38](#_ENREF_38)) | Missed depression diagnosis | SPC | Active care: PCPs were exposed to advisory messages on the paper encounter-based upon AHCPRs guidelines AND advise to click on the computer desk top icon to obtain further treatment advise from the EMR intranet site | Passive care: PCPs provided with a reminder of their patients’ depression diagnosis on the paper encounter form to treat depressive episodes, but offered no details on how to do so | Nonimprovement of depressive symptoms | 1.06 (0.78-1.44) |
| Passive care: PCPs provided with a reminder of their patients’ depression dx on the paper encounter form to treat depressive episodes, but offered no details on how to do so | Usual care | Nonimprovement of depressive symptoms | 0.88 (0.65-1.19) |
| Active care: PCPs were exposed to advisory messages on the paper encounter-based upon AHCPRs guidelines AND advise to click on the computer desk top icon to obtain further treatment advise from the EMR intranet site | Usual care | Nonimprovement of depressive symptoms | 0.93 (0.70-1.25) |
| **Composite Clinical Outcomes** | | | | | | | |
| Sakr, 1999([37](#_ENREF_37)) | Clinically important errors, including errors in the diagnosis pathway (i.e., history, physical examination, and radiographic interpretation errors) | PC | Use of nurse practitioner in providing care in the emergency department | Use of junior doctors in the emergency department | DAO+ TUO: Clinically important errors (composite outcome for diagnostic errors, treatment/follow-up errors) | 0.86 (0.63-1.18) |
| Schriger, 2001([39](#_ENREF_39)) | Misdiagnosis of occult mental illness | SPC | Report of a computerized psychiatric interview (PRIME-MD) given to the physician | PRIME-MD report not given to the Physician | Consultation or referral for mental illness plus other (psychiatric diagnosis) | 1.60 (0.47-5.48) |
| Kuperman, 1999(28) | Delays between laboratory results and clinical action | TBS | Computer system to detect critical laboratory conditions and notify the physician via hospital’s paging system | No automatic notification for alerts | TUO+PO: Adverse events (cardiopulmonary arrest, ICU admissions, strokes, acute renal failure, death, need for surgery) | 1.20 (0.78-1.84) |

**Abbreviations:** AHCPR = Agency for Health Care Policy and Research; ARM = additional review methods; DAO = diagnostic accuracy outcome; EI = educational intervention; EMR = electronic medical record; ICU: intensive care unit; nss = not statistically significant; PC = personnel change; PCP = primary care physician; PO = patient outcomes; PRIME-MD: Primary Care Evaluation of Mental Disorders; SPC = structured process change; ss = statistically significant; T= technique; TBS = technology-based systems intervention; TUO = therapeutic use outcome.

References

1. Graber ML. Next steps: envisioning a research agenda. Advances in health sciences education : theory and practice. 2009;14 Suppl 1:107-12. Epub 2009/08/12. doi: 10.1007/s10459-009-9183-1. PubMed PMID: 19669917.

2. Schiff GD, Hasan O, Kim S, Abrams R, Cosby K, Lambert BL, et al. Diagnostic error in medicine: analysis of 583 physician-reported errors. Archives of internal medicine. 2009;169(20):1881-7. Epub 2009/11/11. doi: 10.1001/archinternmed.2009.333. PubMed PMID: 19901140.

3. Shojania KG, Burton EC, McDonald KM, Goldman L. Changes in rates of autopsy-detected diagnostic errors over time: a systematic review. JAMA. 2003;289(21):2849-56. Epub 2003/06/05. doi: 10.1001/jama.289.21.2849 [doi] 289/21/2849 [pii]. PubMed PMID: 12783916.

4. Newswire P. Americans Are Concerned About Hospital-Based Medical and Surgical Errors. Wall Street Journal Online’s Health Industry Edition. 2004.

5. Schiff GD, Kim S, Abrams R, Cosby K, Lambert B, Elstein AS, et al. Diagnosing Diagnosis Errors: Lessons from a Multi-institutional. In: Henriksen K, Battles JB, Marks ES, Lewin DI, editors. Advances in Patient Safety: From Research to Implementation (Volume 2:. Advances in Patient Safety. Rockville (MD)2005.

6. Singh H, Daci K, Petersen LA, Collins C, Petersen NJ, Shethia A, et al. Missed opportunities to initiate endoscopic evaluation for colorectal cancer diagnosis. Am J Gastroenterol. 2009;104(10):2543-54. Epub 2009/06/25. doi: ajg2009324 [pii] 10.1038/ajg.2009.324. PubMed PMID: 19550418; PubMed Central PMCID: PMC2758321.

7. Singh H, Hirani K, Kadiyala H, Rudomiotov O, Davis T, Khan MM, et al. Characteristics and predictors of missed opportunities in lung cancer diagnosis: an electronic health record-based study. J Clin Oncol. 2010;28(20):3307-15. Epub 2010/06/10. doi: JCO.2009.25.6636 [pii] 10.1200/JCO.2009.25.6636. PubMed PMID: 20530272; PubMed Central PMCID: PMC2903328.

8. Singh H, Thomas EJ, Wilson L, Kelly PA, Pietz K, Elkeeb D, et al. Errors of diagnosis in pediatric practice: a multisite survey. Pediatrics. 2010;126(1):70-9. Epub 2010/06/23. doi: peds.2009-3218 [pii] 10.1542/peds.2009-3218. PubMed PMID: 20566604; PubMed Central PMCID: PMC2921702.

9. Moore LJ, Jones SL, Kreiner LA, McKinley B, Sucher JF, Todd SR, et al. Validation of a screening tool for the early identification of sepsis. The Journal of trauma. 2009;66(6):1539-46; discussion 46-7. Epub 2009/06/11. doi: 10.1097/TA.0b013e3181a3ac4b00005373-200906000-00005 [pii]. PubMed PMID: 19509612.

10. Phillips RL, Jr., Bartholomew LA, Dovey SM, Fryer GE, Jr., Miyoshi TJ, Green LA. Learning from malpractice claims about negligent, adverse events in primary care in the United States. Quality & safety in health care. 2004;13(2):121-6. Epub 2004/04/08. PubMed PMID: 15069219; PubMed Central PMCID: PMC1743812.

11. Selbst SM. Pediatric emergency medicine: legal briefs. Pediatric emergency care. 2005;21(3):214-8. Epub 2005/03/04. PubMed PMID: 15744204.

12. Tehrani AS, Lee H, Mathews S, Shore A, Frick KD, Makary M, et al., editors. 20-year Summary of U.S. Malpractice Claims for Diagnostic Errors from 1985-2005. 33rd Annual Meeting of the Society for Medical Decision Making; 2011; Chicago, IL.

13. Bishop TF, Ryan AM, Casalino LP. Paid malpractice claims for adverse events in inpatient and outpatient settings. JAMA. 2011;305(23):2427-31. Epub 2011/06/16. doi: 305/23/2427 [pii] 10.1001/jama.2011.813. PubMed PMID: 21673294.

14. Ely JW, Graber ML, Croskerry P. Checklists to reduce diagnostic errors. Acad Med. 2011;86(3):307-13. Epub 2011/01/21. doi: 10.1097/ACM.0b013e31820824cd [doi]. PubMed PMID: 21248608.

15. Cosby KS. A framework for classifying factors that contribute to error in the emergency department. Annals of emergency medicine. 2003;42(6):815-23. Epub 2003/11/25. doi: 10.1016/S0196064403006358. PubMed PMID: 14634609.

16. Tversky A, Kahneman D. Judgment under Uncertainty: Heuristics and Biases. Science. 1974;185(4157):1124-31. Epub 1974/09/27. doi: 185/4157/1124 [pii] 10.1126/science.185.4157.1124. PubMed PMID: 17835457.

17. Metcalfe J, Shimamura AP. Metacognition : knowing about knowing. Cambridge, Mass. ; London: MIT Press; 1994.

18. Reason J. Human error: models and management. BMJ. 2000;320(7237):768-70. Epub 2000/03/17. PubMed PMID: 10720363; PubMed Central PMCID: PMC1117770.

19. Berner ES. Diagnostic error in medicine: introduction. Advances in health sciences education : theory and practice. 2009;14 Suppl 1:1-5. Epub 2009/08/12. doi: 10.1007/s10459-009-9187-x. PubMed PMID: 19669914.

20. Schiff GD, Bates DW. Can electronic clinical documentation help prevent diagnostic errors? N Engl J Med. 2010;362(12):1066-9. Epub 2010/03/26. doi: 362/12/1066 [pii] 10.1056/NEJMp0911734 [doi]. PubMed PMID: 20335582.

21. Winters BD, Aswani MS, Pronovost PJ. Commentary: Reducing diagnostic errors: another role for checklists? Acad Med. 2011;86(3):279-81. Epub 2011/02/25. doi: 10.1097/ACM.0b013e3182082692 [doi] 00001888-201103000-00011 [pii]. PubMed PMID: 21346432.

22. Wahls TL, Cram P. Proposed interventions to decrease the frequency of missed test results. Advances in health sciences education : theory and practice. 2009;14 Suppl 1:51-6. Epub 2009/08/12. doi: 10.1007/s10459-009-9180-4. PubMed PMID: 19669920.

23. Singh H, Graber M, Kissam SM, Sorensen AV, Lenfestey NF, Tant EM, et al. System-related interventions to reduce diagnostic errors: a narrative review. BMJ Qual Saf. 2011. doi: 10.1136/bmjqs-2011-000150.

24. Graber ML, Kissam S, Payne VL, Meyer AN, Sorensen A, Lenfestey N, et al. Cognitive interventions to reduce diagnostic error: a narrative review. BMJ Qual Saf. 2012;21(7):535-57. Epub 2012/05/01. doi: bmjqs-2011-000149 [pii] 10.1136/bmjqs-2011-000149. PubMed PMID: 22543420.

25. Perno JF, Schunk JE, Hansen KW, Furnival RA. Significant reduction in delayed diagnosis of injury with implementation of a pediatric trauma service. Pediatric emergency care. 2005;21(6):367-71. Epub 2005/06/09. doi: 00006565-200506000-00003 [pii]. PubMed PMID: 15942513.

26. Thomas SH, Silen W, Cheema F, Reisner A, Aman S, Goldstein JN, et al. Effects of morphine analgesia on diagnostic accuracy in Emergency Department patients with abdominal pain: a prospective, randomized trial. J Am Coll Surg. 2003;196(1):18-31. Epub 2003/01/09. doi: S1072-7515(02)01480-1 [pii]. PubMed PMID: 12517545.

27. Bogusevicius A, Maleckas A, Pundzius J, Skaudickas D. Prospective randomised trial of computer-aided diagnosis and contrast radiography in acute small bowel obstruction. Eur J Surg. 2002;168(2):78-83. Epub 2002/07/13. doi: 10.1080/11024150252884287. PubMed PMID: 12113275.

28. Kuperman GJ, Teich JM, Tanasijevic MJ, Ma’Luf N, Rittenberg E, Jha A, et al. Improving response to critical laboratory results with automation: results of a randomized controlled trial. J Am Med Inform Assoc. 1999;6(6):512-22. Epub 1999/12/01. PubMed PMID: 10579608; PubMed Central PMCID: PMC61393.

29. Dudley M, Channer KS. Assessment of the value of technician reporting of electrocardiographs in an accident and emergency department. J Accid Emerg Med. 1997;14(5):307-10. Epub 1997/10/08. PubMed PMID: 9315933; PubMed Central PMCID: PMC1343097.

30. Nam YS, Pikarsky AJ, Wexner SD, Singh JJ, Weiss EG, Nogueras JJ, et al. Reproducibility of colonic transit study in patients with chronic constipation. Dis Colon Rectum. 2001;44(1):86-92. Epub 2002/01/24. PubMed PMID: 11805568.

31. Beigi B, Uddin JM, McMullan TF, Linardos E. Inaccuracy of diagnosis in a cohort of patients on the waiting list for dacryocystorhinostomy when the diagnosis was made by only syringing the lacrimal system. Eur J Ophthalmol. 2007;17(4):485-9. Epub 2007/08/03. PubMed PMID: 17671919.

32. Major K, Shabot MM, Cunneen S. Wireless clinical alerts and patient outcomes in the surgical intensive care unit. Am Surg. 2002;68(12):1057-60. Epub 2003/01/09. PubMed PMID: 12516808.

33. Etchells E, Adhikari NK, Wu R, Cheung M, Quan S, Mraz R, et al. Real-time automated paging and decision support for critical laboratory abnormalities. BMJ Qual Saf. 2011;20(11):924-30. Epub 2011/07/05. doi: bmjqs.2010.051110 [pii] 10.1136/bmjqs.2010.051110. PubMed PMID: 21725046.

34. Fitzgerald M, Cameron P, Mackenzie C, Farrow N, Scicluna P, Gocentas R, et al. Trauma resuscitation errors and computer-assisted decision support. Arch Surg. 2011;146(2):218-25. Epub 2011/02/23. doi: 146/2/218 [pii] 10.1001/archsurg.2010.333. PubMed PMID: 21339436.

35. Chern CH, How CK, Wang LM, Lee CH, Graff L. Decreasing clinically significant adverse events using feedback to emergency physicians of telephone follow-up outcomes. Annals of emergency medicine. 2005;45(1):15-23. Epub 2005/01/07. doi: S0196064404012880 [pii] 10.1016/j.annemergmed.2004.08.012 [doi]. PubMed PMID: 15635301.

36. Vernon DD, Furnival RA, Hansen KW, Diller EM, Bolte RG, Johnson DG, et al. Effect of a pediatric trauma response team on emergency department treatment time and mortality of pediatric trauma victims. Pediatrics. 1999;103(1):20-4. Epub 1999/01/26. PubMed PMID: 9917434.

37. Sakr M, Angus J, Perrin J, Nixon C, Nicholl J, Wardrope J. Care of minor injuries by emergency nurse practitioners or junior doctors: a randomised controlled trial. Lancet. 1999;354(9187):1321-6. Epub 1999/10/26. doi: S0140673699024472 [pii]. PubMed PMID: 10533859.

38. Rollman BL, Hanusa BH, Lowe HJ, Gilbert T, Kapoor WN, Schulberg HC. A randomized trial using computerized decision support to improve treatment of major depression in primary care. J Gen Intern Med. 2002;17(7):493-503. Epub 2002/07/23. doi: jgi10421 [pii]. PubMed PMID: 12133139; PubMed Central PMCID: PMC1495078.

39. Schriger DL, Gibbons PS, Langone CA, Lee S, Altshuler LL. Enabling the diagnosis of occult psychiatric illness in the emergency department: A randomized, controlled trial of the computerized, self-administered PRIME-MD diagnostic system. Annals of emergency medicine. 2001;37(2):132-40. PubMed PMID: ISI:000166803800002.

40. Ciatto S, Del Turco MR, Morrone D, Catarzi S, Ambrogetti D, Cariddi A, et al. Independent double reading of screening mammograms. J Med Screen. 1995;2(2):99-101. Epub 1995/01/01. PubMed PMID: 7497164.

41. Duijm LE, Groenewoud JH, Fracheboud J, de Koning HJ. Additional double reading of screening mammograms by radiologic technologists: impact on screening performance parameters. J Natl Cancer Inst. 2007;99(15):1162-70. Epub 2007/07/27. doi: djm050 [pii] 10.1093/jnci/djm050 [doi]. PubMed PMID: 17652282.

42. Howard J, Sundararajan R, Thomas SG, Walsh M, Sundararajan M. Reducing missed injuries at a level II trauma center. J Trauma Nurs. 2006;13(3):89-95. Epub 2006/10/21. PubMed PMID: 17052086.

43. Manion E, Cohen MB, Weydert J. Mandatory second opinion in surgical pathology referral material: clinical consequences of major disagreements. The American journal of surgical pathology. 2008;32(5):732-7. Epub 2008/03/25. doi: 10.1097/PAS.0b013e31815a04f5. PubMed PMID: 18360282.

44. Nordrum I, Johansen M, Amin A, Isaksen V, Ludvigsen JA. Diagnostic accuracy of second-opinion diagnoses based on still images. Hum Pathol. 2004;35(1):129-35. Epub 2004/01/28. doi: S0046817703004982 [pii]. PubMed PMID: 14745735.

45. Raab SS, Stone CH, Jensen CS, Zarbo RJ, Meier FA, Grzybicki DM, et al. Double slide viewing as a cytology quality improvement initiative. Am J Clin Pathol. 2006;125(4):526-33. Epub 2006/04/22. doi: TKNM9GRGPL2JT95Y [pii] 10.1309/TKNM-9GRG-PL2J-T95Y [doi]. PubMed PMID: 16627263.

46. Singh P, Warnakulasuriya S. The two-week wait cancer initiative on oral cancer; the predictive value of urgent referrals to an oral medicine unit. British dental journal. 2006;201(11):717-20; discussion 4. Epub 2006/12/13. doi: 10.1038/sj.bdj.4814304. PubMed PMID: 17159958.

47. Bruner JM, Inouye L, Fuller GN, Langford LA. Diagnostic discrepancies and their clinical impact in a neuropathology referral practice. Cancer. 1997;79(4):796-803. Epub 1997/02/15. doi: 10.1002/(SICI)1097-0142(19970215)79:4<796::AID-CNCR17>3.0.CO;2-V [pii]. PubMed PMID: 9024718.

48. Canon CL, Smith JK, Morgan DE, Jones BC, Fell SC, Kenney PJ, et al. Double reading of barium enemas: is it necessary? AJR American journal of roentgenology. 2003;181(6):1607-10. Epub 2003/11/25. PubMed PMID: 14627582.

49. Carew-McColl M. Radiological interpretation in an accident and emergency department. Br J Clin Pract. 1983;37(11-12):375-7. Epub 1983/11/01. PubMed PMID: 6671078.

50. Espinosa JA, Nolan TW. Reducing errors made by emergency physicians in interpreting radiographs: longitudinal study. BMJ. 2000;320(7237):737-40. Epub 2000/03/17. PubMed PMID: 10720354; PubMed Central PMCID: PMC27314.

51. Galasko CS, Monahan PR. Value of re-examining x-ray films of outpatients attending accident services. Br Med J. 1971;1(5750):643-4. Epub 1971/03/20. PubMed PMID: 5548841; PubMed Central PMCID: PMC1795440.

52. Kwek BH, Lau TN, Ng FC, Gao F. Non-consensual double reading in the Singapore Breast Screening Project: benefits and limitations. Annals of the Academy of Medicine, Singapore. 2003;32(4):438-41. Epub 2003/09/13. PubMed PMID: 12968545.

53. Lind AC, Bewtra C, Healy JC, Sims KL. Prospective peer review in surgical pathology. Am J Clin Pathol. 1995;104(5):560-6. Epub 1995/11/01. PubMed PMID: 7572817.

54. Lufkin KC, Smith SW, Matticks CA, Brunette DD. Radiologists’ review of radiographs interpreted confidently by emergency physicians infrequently leads to changes in patient management. Annals of emergency medicine. 1998;31(2):202-7. Epub 1998/02/24. PubMed PMID: 9472181.

55. Murphy R, Slater A, Uberoi R, Bungay H, Ferrett C. Reduction of perception error by double reporting of minimal preparation CT colon. Br J Radiol. 2010;83(988):331-5. Epub 2009/08/05. doi: 65634575 [pii] 10.1259/bjr/65634575 [doi]. PubMed PMID: 19651707.

56. Parameswaran L, Prihoda TJ, Sharkey FE. Diagnostic efficacy of additional step-sections in colorectal biopsies originally diagnosed as normal. Hum Pathol. 2008;39(4):579-83. Epub 2008/02/22. doi: S0046-8177(07)00476-5 [pii] 10.1016/j.humpath.2007.08.015 [doi]. PubMed PMID: 18289637.

57. Raab SS, Grzybicki DM, Mahood LK, Parwani AV, Kuan SF, Rao UN. Effectiveness of random and focused review in detecting surgical pathology error. Am J Clin Pathol. 2008;130(6):905-12. Epub 2008/11/21. doi: R8245P6P760X8402 [pii] 10.1309/AJCPPIA5D7MYKDWF [doi]. PubMed PMID: 19019767.

58. Robson N, van Benthem PP, Gan R, Dixon AK. Casualty X-ray reporting: a student survey. Clin Radiol. 1985;36(5):479-81. Epub 1985/09/01. doi: S0009-9260(85)80192-6 [pii]. PubMed PMID: 4075715.

59. Thiesse P, Ollivier L, Di Stefano-Louineau D, Negrier S, Savary J, Pignard K, et al. Response rate accuracy in oncology trials: reasons for interobserver variability. Groupe Francais d’Immunotherapie of the Federation Nationale des Centres de Lutte Contre le Cancer. J Clin Oncol. 1997;15(12):3507-14. Epub 1997/12/13. PubMed PMID: 9396404.

60. Westra WH, Kronz JD, Eisele DW. The impact of second opinion surgical pathology on the practice of head and neck surgery: a decade experience at a large referral hospital. Head & neck. 2002;24(7):684-93. Epub 2002/07/12. doi: 10.1002/hed.10105. PubMed PMID: 12112543.

61. Seltzer SE, Hessel SJ, Herman PG, Swensson RG, Sheriff CR. Resident film interpretations and staff review. AJR American journal of roentgenology. 1981;137(1):129-33. Epub 1981/07/01. PubMed PMID: 6787863.

62. McPhee SJ, Bird JA, Jenkins CN, Fordham D. Promoting cancer screening. A randomized, controlled trial of three interventions. Archives of internal medicine. 1989;149(8):1866-72. Epub 1989/08/01. PubMed PMID: 2764657.

63. Kundel HL, Nodine CF, Krupinski EA. Computer-displayed eye position as a visual aid to pulmonary nodule interpretation. Invest Radiol. 1990;25(8):890-6. Epub 1990/08/01. PubMed PMID: 2394571.

64. Thomas HG, Mason AC, Smith RM, Fergusson CM. Value of radiograph audit in an accident service department. Injury. 1992;23(1):47-50. Epub 1992/01/01. doi: 0020-1383(92)90126-D [pii]. PubMed PMID: 1541500.

65. Ross PD, Huang C, Karpf D, Lydick E, Coel M, Hirsch L, et al. Blinded reading of radiographs increases the frequency of errors in vertebral fracture detection. J Bone Miner Res. 1996;11(11):1793-800. Epub 1996/11/01. doi: 10.1002/jbmr.5650111124 [doi]. PubMed PMID: 8915788.

66. Jiang Y, Nishikawa RM, Schmidt RA, Toledano AY, Doi K. Potential of computer-aided diagnosis to reduce variability in radiologists’ interpretations of mammograms depicting microcalcifications. Radiology. 2001;220(3):787-94. Epub 2001/08/30. PubMed PMID: 11526283.

67. Trotter MJ, Bruecks AK. Interpretation of skin biopsies by general pathologists: diagnostic discrepancy rate measured by blinded review. Arch Pathol Lab Med. 2003;127(11):1489-92. Epub 2003/10/22. doi: OA3050 [pii] 10.1043/1543-2165(2003)127<1489:IOSBBG>2.0.CO;2 [doi]. PubMed PMID: 14567717.

68. Peldschus K, Herzog P, Wood SA, Cheema JI, Costello P, Schoepf UJ. Computer-aided diagnosis as a second reader: spectrum of findings in CT studies of the chest interpreted as normal. Chest. 2005;128(3):1517-23. Epub 2005/09/16. doi: 10.1378/chest.128.3.1517. PubMed PMID: 16162752.

69. Tsai JJ, Yeun JY, Kumar VA, Don BR. Comparison and interpretation of urinalysis performed by a nephrologist versus a hospital-based clinical laboratory. Am J Kidney Dis. 2005;46(5):820-9. Epub 2005/10/29. doi: S0272-6386(05)01050-4 [pii] 10.1053/j.ajkd.2005.07.039 [doi]. PubMed PMID: 16253721.

70. Goodyear N, Ulness BK, Prentice JL, Cookson BT, Limaye AP. Systematic assessment of culture review as a tool to assess errors in the clinical microbiology laboratory. Arch Pathol Lab Med. 2008;132(11):1792-5. Epub 2008/11/04. doi: 2008-0037-OA [pii] 10.1043/1543-2165-132.11.1792. PubMed PMID: 18976017.

71. Hamady ZZ, Mather N, Lansdown MR, Davidson L, Maclennan KA. Surgical pathological second opinion in thyroid malignancy: impact on patients’ management and prognosis. Eur J Surg Oncol. 2005;31(1):74-7. Epub 2005/01/12. doi: S0748-7983(04)00244-6 [pii] 10.1016/j.ejso.2004.08.010. PubMed PMID: 15642429.

72. Attard AR, Corlett MJ, Kidner NJ, Leslie AP, Fraser IA. Safety of early pain relief for acute abdominal pain. BMJ. 1992;305(6853):554-6. Epub 1992/09/05. PubMed PMID: 1393034; PubMed Central PMCID: PMC1883284.

73. Resnick NM, Brandeis GH, Baumann MM, DuBeau CE, Yalla SV. Misdiagnosis of urinary incontinence in nursing home women: prevalence and a proposed solution. Neurourol Urodyn. 1996;15(6):599-613; discussion -8. Epub 1996/01/01. doi: 10.1002/(SICI)1520-6777(1996)15:6<599::AID-NAU2>3.0.CO;2-A [pii] 10.1002/(SICI)1520-6777(1996)15:6<599::AID-NAU2>3.0.CO;2-A [doi]. PubMed PMID: 8916113.

74. Borgstein PJ, Gordijn RV, Eijsbouts QA, Cuesta MA. Acute appendicitis--a clear-cut case in men, a guessing game in young women. A prospective study on the role of laparoscopy. Surg Endosc. 1997;11(9):923-7. Epub 1997/09/19. PubMed PMID: 9294274.

75. Vermeulen B, Morabia A, Unger PF, Goehring C, Grangier C, Skljarov I, et al. Acute appendicitis: influence of early pain relief on the accuracy of clinical and US findings in the decision to operate--a randomized trial. Radiology. 1999;210(3):639-43. Epub 1999/04/20. PubMed PMID: 10207461.

76. Prieto VG, Argenyi ZB, Barnhill RL, Duray PH, Elenitsas R, From L, et al. Are en face frozen sections accurate for diagnosing margin status in melanocytic lesions? Am J Clin Pathol. 2003;120(2):203-8. Epub 2003/08/23. doi: 10.1309/J1Q0-V35E-UTMV-R193 [doi]. PubMed PMID: 12931550.

77. Kokki H, Lintula H, Vanamo K, Heiskanen M, Eskelinen M. Oxycodone vs placebo in children with undifferentiated abdominal pain: a randomized, double-blind clinical trial of the effect of analgesia on diagnostic accuracy. Arch Pediatr Adolesc Med. 2005;159(4):320-5. Epub 2005/04/06. doi: 159/4/320 [pii] 10.1001/archpedi.159.4.320. PubMed PMID: 15809382.

78. Hewett DG, Rex DK. Cap-fitted colonoscopy: a randomized, tandem colonoscopy study of adenoma miss rates. Gastrointest Endosc. 2010;72(4):775-81. Epub 2010/06/29. doi: S0016-5107(10)01558-0 [pii] 10.1016/j.gie.2010.04.030 [doi]. PubMed PMID: 20579648.

79. Brossner C, Madersbacher S, Bayer G, Pycha A, Klingler HC, Maier U. Comparative study of two different TRUS-guided sextant biopsy techniques in detecting prostate cancer in one biopsy session. European urology. 2000;37(1):65-71. Epub 2000/02/15. PubMed PMID: 10671788.

80. Naughton CK, Miller DC, Mager DE, Ornstein DK, Catalona WJ. A prospective randomized trial comparing 6 versus 12 prostate biopsy cores: impact on cancer detection. The Journal of urology. 2000;164(2):388-92. Epub 2000/07/14. PubMed PMID: 10893592.

81. Presti JC, Jr., Chang JJ, Bhargava V, Shinohara K. The optimal systematic prostate biopsy scheme should include 8 rather than 6 biopsies: results of a prospective clinical trial. The Journal of urology. 2000;163(1):163-6; discussion 6-7. Epub 1999/12/22. PubMed PMID: 10604337.

82. Ravery V, Goldblatt L, Royer B, Blanc E, Toublanc M, Boccon-Gibod L. Extensive biopsy protocol improves the detection rate of prostate cancer. The Journal of urology. 2000;164(2):393-6. Epub 2000/07/14. PubMed PMID: 10893593.

83. Weatherburn G, Bryan S, Nicholas A, Cocks R. The effect of a picture archiving and communications system (PACS) on diagnostic performance in the accident and emergency department. J Accid Emerg Med. 2000;17(3):180-4. Epub 2000/05/20. PubMed PMID: 10819379; PubMed Central PMCID: PMC1725383.

84. de Lacey G, Barker A, Harper J, Wignall B. An assessment of the clinical effects of reporting accident and emergency radiographs. Br J Radiol. 1980;53(628):304-9. Epub 1980/04/01. PubMed PMID: 7378697.

85. Jacobs MJ, Edmondson MJ, Lowry JC. Accuracy of diagnosis of fractures by maxillofacial and accident and emergency doctors using plain radiography compared with a telemedicine system: a prospective study. Br J Oral Maxillofac Surg. 2002;40(2):156-62. Epub 2002/08/16. PubMed PMID: 12180212.

86. McCarthy PL, Sznajderman SD, Lustman-Findling K, Baron MA, Fink HD, Czarkowski N, et al. Mothers’ clinical judgment: a randomized trial of the Acute Illness Observation Scales. J Pediatr. 1990;116(2):200-6. Epub 1990/02/01. PubMed PMID: 2405140.

87. Fridriksson S, Hillman J, Landtblom AM, Boive J. Education of referring doctors about sudden onset headache in subarachnoid hemorrhage. A prospective study. Acta Neurol Scand. 2001;103(4):238-42. Epub 2001/05/01. doi: ane065 [pii]. PubMed PMID: 11328195.

88. Thaler T, Tempelmann V, Maggiorini M, Rudiger A. The frequency of electrocardiographic errors due to electrode cable switches: a before and after study. J Electrocardiol. 2010;43(6):676-81. Epub 2010/07/02. doi: S0022-0736(10)00203-7 [pii] 10.1016/j.jelectrocard.2010.05.007 [doi]. PubMed PMID: 20591441.

89. Gleadhill DN, Thomson JY, Simms P. Can more efficient use be made of x ray examinations in the accident and emergency department? Br Med J (Clin Res Ed). 1987;294(6577):943-7. Epub 1987/04/11. PubMed PMID: 3107669; PubMed Central PMCID: PMC1246007.

90. Linver MN, Paster SB, Rosenberg RD, Key CR, Stidley CA, King WV. Improvement in mammography interpretation skills in a community radiology practice after dedicated teaching courses: 2-year medical audit of 38,633 cases. Radiology. 1992;184(1):39-43. Epub 1992/07/01. PubMed PMID: 1609100.

91. Enderson BL, Reath DB, Meadors J, Dallas W, DeBoo JM, Maull KI. The tertiary trauma survey: a prospective study of missed injury. The Journal of trauma. 1990;30(6):666-9; discussion 9-70. Epub 1990/06/01. PubMed PMID: 2352294.

92. Klassen TP, Ropp LJ, Sutcliffe T, Blouin R, Dulberg C, Raman S, et al. A randomized, controlled trial of radiograph ordering for extremity trauma in a pediatric emergency department. Annals of emergency medicine. 1993;22(10):1524-9. Epub 1993/10/01. doi: S0196-0644(05)81252-1 [pii]. PubMed PMID: 8214829.

93. Biffl WL, Harrington DT, Cioffi WG. Implementation of a tertiary trauma survey decreases missed injuries. The Journal of trauma. 2003;54(1):38-43; discussion -4. Epub 2003/01/25. doi: 10.1097/01.TA.0000046379.29204.CE [doi]. PubMed PMID: 12544897.

94. Soundappan SV, Holland AJ, Cass DT. Role of an extended tertiary survey in detecting missed injuries in children. The Journal of trauma. 2004;57(1):114-8; discussion 8. Epub 2004/07/31. PubMed PMID: 15284560.

95. Ursprung R, Gray JE, Edwards WH, Horbar JD, Nickerson J, Plsek P, et al. Real time patient safety audits: improving safety every day. Quality & safety in health care. 2005;14(4):284-9. Epub 2005/08/04. doi: 14/4/284 [pii] 10.1136/qshc.2004.012542. PubMed PMID: 16076794; PubMed Central PMCID: PMC1744058.

96. Raab SS, Andrew-Jaja C, Condel JL, Dabbs DJ. Improving Papanicolaou test quality and reducing medical errors by using Toyota production system methods. Am J Obstet Gynecol. 2006;194(1):57-64. Epub 2006/01/04. doi: S0002-9378(05)00972-5 [pii] 10.1016/j.ajog.2005.06.069. PubMed PMID: 16389010.

97. Raab SS, Grzybicki DM, Sudilovsky D, Balassanian R, Janosky JE, Vrbin CM. Effectiveness of Toyota process redesign in reducing thyroid gland fine-needle aspiration error. Am J Clin Pathol. 2006;126(4):585-92. Epub 2006/08/30. doi: NJQ1L7KA10UKV93Q [pii] 10.1309/NJQ1L7KA10UKV93Q [doi]. PubMed PMID: 16938657.

98. Raab SS, Tworek JA, Souers R, Zarbo RJ. The value of monitoring frozen section-permanent section correlation data over time. Arch Pathol Lab Med. 2006;130(3):337-42. Epub 2006/03/08. doi: CP5722 [pii] 10.1043/1543-2165(2006)130[337:TVOMFS]2.0.CO;2 [doi]. PubMed PMID: 16519561.

99. Raab SS, Jones BA, Souers R, Tworek JA. The effect of continuous monitoring of cytologic-histologic correlation data on cervical cancer screening performance. Arch Pathol Lab Med. 2008;132(1):16-22. Epub 2008/01/10. doi: 2007-0197-CPR1 [pii] 10.1043/1543-2165(2008)132[16:TEOCMO]2.0.CO;2 [doi]. PubMed PMID: 18181668.

100. Mueller CA, Klaassen-Mielke R, Penner E, Junius-Walker U, Hummers-Pradier E, Theile G. Disclosure of new health problems and intervention planning using a geriatric assessment in a primary care setting. Croat Med J. 2010;51(6):493-500. Epub 2010/12/17. PubMed PMID: 21162161; PubMed Central PMCID: PMC3012401.

101. de Vries EN, Eikens-Jansen MP, Hamersma AM, Smorenburg SM, Gouma DJ, Boermeester MA. Prevention of surgical malpractice claims by use of a surgical safety checklist. Ann Surg. 2011;253(3):624-8. Epub 2011/01/07. doi: 10.1097/SLA.0b013e3182068880. PubMed PMID: 21209590.

102. Lewis G, Sharp D, Bartholomew J, Pelosi AJ. Computerized assessment of common mental disorders in primary care: effect on clinical outcome. Fam Pract. 1996;13(2):120-6. Epub 1996/04/01. PubMed PMID: 8732321.

103. Wexler JR, Swender PT, Tunnessen WW, Jr., Oski FA. Impact of a system of computer-assisted diagnosis. Initial evaluation of the hospitalized patient. Am J Dis Child. 1975;129(2):203-5. Epub 1975/02/11. PubMed PMID: 1091140.

104. Wellwood J, Johannessen S, Spiegelhalter DJ. How does computer-aided diagnosis improve the management of acute abdominal pain? Ann R Coll Surg Engl. 1992;74(1):40-6. Epub 1992/01/01. PubMed PMID: 1736794; PubMed Central PMCID: PMC2497469.

105. Selker HP, Beshansky JR, Griffith JL, Aufderheide TP, Ballin DS, Bernard SA, et al. Use of the acute cardiac ischemia time-insensitive predictive instrument (ACI-TIPI) to assist with triage of patients with chest pain or other symptoms suggestive of acute cardiac ischemia. A multicenter, controlled clinical trial. Ann Intern Med. 1998;129(11):845-55. Epub 1998/12/29. PubMed PMID: 9867725.

106. Poon EG, Kuperman GJ, Fiskio J, Bates DW. Real-time notification of laboratory data requested by users through alphanumeric pagers. J Am Med Inform Assoc. 2002;9(3):217-22. Epub 2002/04/25. PubMed PMID: 11971882; PubMed Central PMCID: PMC344581.

107. Gur D, Sumkin JH, Rockette HE, Ganott M, Hakim C, Hardesty L, et al. Changes in breast cancer detection and mammography recall rates after the introduction of a computer-aided detection system. J Natl Cancer Inst. 2004;96(3):185-90. Epub 2004/02/05. PubMed PMID: 14759985.

108. Kakeda S, Moriya J, Sato H, Aoki T, Watanabe H, Nakata H, et al. Improved detection of lung nodules on chest radiographs using a commercial computer-aided diagnosis system. AJR American journal of roentgenology. 2004;182(2):505-10. Epub 2004/01/23. PubMed PMID: 14736690.

109. Cupples TE, Cunningham JE, Reynolds JC. Impact of computer-aided detection in a regional screening mammography program. AJR American journal of roentgenology. 2005;185(4):944-50. Epub 2005/09/24. doi: 10.2214/AJR.04.1300. PubMed PMID: 16177413.

110. Ramnarayan P, Winrow A, Coren M, Nanduri V, Buchdahl R, Jacobs B, et al. Diagnostic omission errors in acute paediatric practice: impact of a reminder system on decision-making. BMC medical informatics and decision making. 2006;6:37. Epub 2006/11/08. doi: 10.1186/1472-6947-6-37. PubMed PMID: 17087835; PubMed Central PMCID: PMC1654143.

111. Fenton JJ, Taplin SH, Carney PA, Abraham L, Sickles EA, D’Orsi C, et al. Influence of computer-aided detection on performance of screening mammography. N Engl J Med. 2007;356(14):1399-409. Epub 2007/04/06. doi: 10.1056/NEJMoa066099. PubMed PMID: 17409321; PubMed Central PMCID: PMC3182841.

112. Park HI, Min WK, Lee W, Park H, Park CJ, Chi HS, et al. Evaluating the short message service alerting system for critical value notification via PDA telephones. Ann Clin Lab Sci. 2008;38(2):149-56. Epub 2008/05/13. doi: 38/2/149 [pii]. PubMed PMID: 18469361.

113. Piva E, Sciacovelli L, Zaninotto M, Laposata M, Plebani M. Evaluation of effectiveness of a computerized notification system for reporting critical values. Am J Clin Pathol. 2009;131(3):432-41. Epub 2009/02/21. doi: 131/3/432 [pii] 10.1309/AJCPYS80BUCBXTUH. PubMed PMID: 19228648.

114. Singh H, Wilson L, Petersen LA, Sawhney MK, Reis B, Espadas D, et al. Improving follow-up of abnormal cancer screens using electronic health records: trust but verify test result communication. BMC medical informatics and decision making. 2009;9:49. Epub 2009/12/17. doi: 1472-6947-9-49 [pii] 10.1186/1472-6947-9-49. PubMed PMID: 20003236; PubMed Central PMCID: PMC2797509.

115. David CV, Chira S, Eells SJ, Ladrigan M, Papier A, Miller LG, et al. Diagnostic accuracy in patients admitted to hospitals with cellulitis. Dermatol Online J. 2011;17(3):1. Epub 2011/03/24. PubMed PMID: 21426867.

116. Olsson SE, Ohlsson M, Ohlin H, Dzaferagic S, Nilsson ML, Sandkull P, et al. Decision support for the initial triage of patients with acute coronary syndromes. Clin Physiol Funct Imaging. 2006;26(3):151-6. Epub 2006/04/28. doi: CPF669 [pii] 10.1111/j.1475-097X.2006.00669.x. PubMed PMID: 16640509.

117. Pozen MW, D’Agostino RB, Selker HP, Sytkowski PA, Hood WB, Jr. A predictive instrument to improve coronary-care-unit admission practices in acute ischemic heart disease. A prospective multicenter clinical trial. N Engl J Med. 1984;310(20):1273-8. Epub 1984/05/17. doi: 10.1056/NEJM198405173102001. PubMed PMID: 6371525.

118. Thomas DC, Spitzer WO, MacFarlane JK. Inter-observer error among surgeons and nurses in presymptomatic detection of breast disease. J Chronic Dis. 1981;34(12):617-26. Epub 1981/01/01. PubMed PMID: 7309826.

119. Davis Giardina T SH. Should patients get direct access to their laboratory test results?: An answer with many questions. JAMA: The Journal of the American Medical Association. 2011;306(22):2502-3. doi: 10.1001/jama.2011.1797.

120. Casalino LP, Dunham D, Chin MH, Bielang R, Kistner EO, Karrison TG, et al. Frequency of Failure to Inform Patients of Clinically Significant Outpatient Test Results. Arch Intern Med. 2009;169(12):1123-9.

121. Callen JL, Westbrook JI, Georgiou A, Li J. Failure to Follow-Up Test Results for Ambulatory Patients: A Systematic Review. J Gen Intern Med. 2011. Epub 2011/12/21. doi: 10.1007/s11606-011-1949-5. PubMed PMID: 22183961.

122. Molins E, Comas M, Roman R, Rodriguez-Blanco T, Sala M, Macia F, et al. Effect of participation on the cumulative risk of false-positive recall in a breast cancer screening programme. Public Health. 2009;123(9):635-7. Epub 2009/09/08. doi: S0033-3506(09)00198-X [pii] 10.1016/j.puhe.2009.07.007 [doi]. PubMed PMID: 19733372.

123. Singh H, Vij M. Eight recommendations for policies for communicating abnormal test results. Jt Comm J Qual Patient Saf. 2010;36:226-32

1. Effect size is relative risk except for Fitzgerald et al. where error rate was used; McPhee et al,where difference in scores post intervention was used and Kuperman et al.al where time to appropriate treatment was used . [↑](#footnote-ref-1)
2. Small Bowel Obstruction [↑](#footnote-ref-2)
3. Results were significant for: Stool occult blood testing, Rectal examination, Sigmoidoscopy, Pelvic exam, Breast exam, Mammography AND Non-significant for Pap smear [↑](#footnote-ref-3)
4. Results were significant for: Breast exam, Mammography AND Non-significant for: Occult blood test, Rectal exam, Sigmoidoscopy, Pap smear, Pelvic exam [↑](#footnote-ref-4)
5. Results were significant for Breast exam AND Non-significant for Mammography [↑](#footnote-ref-5)