



TITLE: Techniques to Improve the Use of Diagnostic Laboratory Test Ordering: Clinical Evidence

DATE: 12 March 2013

RESEARCH QUESTION

What are the techniques to improve physician ordering of diagnostic laboratory tests?

KEY MESSAGE

One health technology assessment, one systematic review, one randomized controlled trial, and three non-randomized studies were identified regarding techniques to improve physician ordering of diagnostic laboratory tests.

METHODS

A focused search (with main concepts appearing in title or major subject heading only) was conducted on key resources including PubMed, The Cochrane Library (2013, Issue 2), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2010 and March 1, 2013. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment (HTA) reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials (RCTs), non-randomized studies (NRSs), and evidence-based guidelines.

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One health technology assessment, one systematic review, one randomized controlled trial, and three non-randomized studies were identified regarding techniques to improve physician ordering of diagnostic laboratory tests. No relevant evidence-based guidelines were identified. Additional references of potential interest are provided in the appendix.

This report was a partial update to “Diagnostic Test Ordering: Techniques to Improve Use” published in 2010 (http://www.cadth.ca/media/pdf/k0194_diagnostic_test_ordering_htis-1-5.pdf).

OVERALL SUMMARY OF FINDINGS

Three studies^{1,2,4} examined the impact of computerized decision support systems (CDSS) on diagnostic test ordering. One HTA¹ studied the use of order communication systems with or without CDSS. The authors suggested that the addition of CDSS appeared to have a small impact on the ordering of diagnostic tests by physicians. The authors of a systematic review² concluded that the use of CDSS improved ordering behavior related to diagnostic lab tests in majority of the studies they identified. The results of a NRS⁴ showed a statistically significant increase in the appropriate ordering of diagnostic tests after the implementation of a computer system and associated guidelines.

One RCT³ compared immediate test ordering with watchful waiting, with or without a quality improvement strategy, before ordering blood tests in patients with unexplained complaints. The authors determined that watchful waiting was a feasible approach and the addition of the quality improvement strategy did not change the results.

The authors of one NRS⁵ developed pathology-specific lab testing profiles to improve appropriate test ordering by physicians. After implementation of the profiles, the number of lab tests ordered decreased as compared to the previous year and physician compliance was improved. Another strategy used to reduce the number of diagnostic tests ordered was to give physicians a pocket size brochure listing the costs of diagnostic tests.⁶ After the intervention, the mean cost per admitted patient decreased by 27%. The authors suggested this method may be useful to reduce both the number and cost of tests.

REFERENCES SUMMARIZED

Health Technology Assessments

1. Main C, Moxham T, Wyatt JC, Kay J, Anderson R, Stein K. Computerised decision support systems in order communication for diagnostic, screening or monitoring test ordering: systematic reviews of the effects and cost-effectiveness of systems. *Health Technol Assess* [Internet]. 2010 [cited 2013 Mar 1];14(48). Available from: <http://www.hta.ac.uk/fullmono/mon1448.pdf>

Systematic Reviews and Meta-analyses

2. Roshanov PS, You JJ, Dhaliwal J, Koff D, Mackay JA, Weise-Kelly L, et al. Can computerized clinical decision support systems improve practitioners' diagnostic test ordering behavior? A decision-maker-researcher partnership systematic review. *Implement Sci* [Internet]. 2011 [cited 2013 Mar 8];6:88. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3174115>
[PubMed: PM21824382](#)

Randomized Controlled Trials

3. van Bokhoven MA, Koch H, van der Weijden T, Weekers-Muyres AH, Bindels PJ, Grol RP, et al. The effect of watchful waiting compared to immediate test ordering instructions on general practitioners' blood test ordering behaviour for patients with unexplained complaints; a randomized clinical trial (ISRCTN55755886). *Implement Sci* [Internet]. 2012 [cited 2013 Mar 8];7:29. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3353203>
[PubMed: PM22475083](#)

Non-Randomized Studies

4. Baddour AA, Dabool AS, Al-Ghamdi SS. Improving laboratory test-ordering with information technology. *IJCM* [Internet]. 2012 Nov [cited 2013 Mar 8]; 3(6): 446-458. Available from: www.scirp.org/journal/PaperDownload.aspx?paperID=24399
5. Baricchi R, Zini M, Nibali MG, Vezzosi W, Insegnante V, Manfuso C, et al. Using pathology-specific laboratory profiles in clinical pathology to reduce inappropriate test requesting: two completed audit cycles. *BMC Health Serv Res* [Internet]. 2012 [cited 2013 Mar 8];12:187. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3439700>
[PubMed: PM22759353](#)
6. Ellemidin S, Rheeder P, Soma P. Providing clinicians with information on laboratory test costs leads to reduction in hospital expenditure. *S Afr Med J*. 2011 Oct;101(10):746-8.
[PubMed: PM22272854](#)

Guidelines and Recommendations

No literature identified.

PREPARED BY:

Canadian Agency for Drugs and Technologies in Health

Tel: 1-866-898-8439

www.cadth.ca

APPENDIX – FURTHER INFORMATION:

Economic Studies

7. Vegting IL, van Beneden M, Kramer MH, Thijs A, Kostense PJ, Nanayakkara PW. How to save costs by reducing unnecessary testing: lean thinking in clinical practice. *Eur J Intern Med.* 2012 Jan;23(1):70-5.
[PubMed: PM22153535](#)

Review Articles

8. Canadian Agency for Drugs and Technologies in Health. Using cost and peer group utilization data to change physician behaviour regarding diagnostic test ordering: effectiveness [Internet]. Ottawa: The Agency; 2012 Jan 19. (Rapid response report : reference list). [cited 2012 Mar 8]. Available from : <http://www.cadth.ca/media/pdf/htis/jan-2012/RA0565%20Physician%20Behaviour%20Final.pdf>

Additional References

9. Tooley M. Advisory board international [Internet]. Washington (DC): The Advisory Board Company. Does health IT support appropriate utilization of diagnostic testing?; 2012 Mar 9 [cited 2013 Mar 8]. Available from: <http://www.advisory.com/Research/Cardiovascular-Roundtable/Cardiovascular-Rounds/2012/03/Does-health-IT-support-appropriate-utilization-of-diagnostic-testing>
10. Qaseem A, Alguire P, Dallas P, Feinberg LE, Fitzgerald FT, Horwitch C, et al. Appropriate use of screening and diagnostic tests to foster high-value, cost-conscious care. *Ann Intern Med.* 2012 Jan 17;156(2):147-9.
[PubMed: PM22250146](#)
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12. Lusky K. Pulling back the reins on superfluous testing [Internet]. College of American Pathologists. Northfield (IL): College of American Pathologists; 2010 Sep [cited 2013 Mar 8]. Available from: http://www.cap.org/apps/cap.portal?_nfpb=true&cntvwrPtl_t_actionOverride=%2Fportlets%2FcontentViewer%2Fshow&_windowLabel=cntvwrPtl_t&cntvwrPtl_t{actionForm.contentReference}=cap_today%2F0910%2F0910b_pulling_back.html&_state=maximized&_pageLabel=cntvwr.