Prevalence of incidental findings in computed tomographic screening of the chest: a systematic review

Jacobs PC, Mali WP, Grobbee DE, van der Graaf Y

CRD summary
This review concluded that 7.7% and 14.2% of patients who underwent screening with computed tomography were found to have clinically significant incidental findings that required additional investigations. Given the limitations of the review and the available evidence, the conclusions should be treated with caution.

Authors’ objectives
To evaluate the prevalence of incidental findings on computed tomography (CT) of the chest.

Searching
PubMed and EMBASE were searched without language restrictions from 1990 to May 2007; only English-language studies were included. The search strategy was reported. Bibliographies of included studies were scanned.

Study selection
Studies that evaluated screening for coronary artery disease or lung cancer with either a standard single-slice helical, multidetector-row or electron-beam CT scanner were eligible for inclusion. Where CT was used for follow-up, data on the prevalence of incidental findings on the baseline CT had to be reported and studies had to specify how a result was defined as clinically significant. Clinically significant was defined as those cases that required follow-up. Where reported, median age of participants ranged from 42 to 66 years. Between 6.7% and 100% of participants were current or former smokers.

Inclusion criteria were applied by two independent reviewers; disagreements were resolved by consensus.

Assessment of study quality
The authors did not state that they assessed study quality.

Data extraction
The number of patients who had lesions, clinically significant findings, newly diagnosed cancer, lung nodules or coronary artery calcium identified incidentally were extracted. The authors did not state how many reviewers performed data extraction.

Methods of synthesis
The studies were combined in a narrative synthesis. Differences between studies were discussed in the text and study details and results were tabulated.

Results of the review
Eleven studies met the inclusion criteria: seven evaluated screening for coronary artery disease (n=6,421, range 258 to 1,812); and four for lung cancer (n=4,531, range 449 to 1929).

In studies that evaluated screening for coronary artery disease, the range of the prevalence for incidental findings was 8% to 58.1% for lesions (five studies), 2.8% to 41.5% for significant findings (seven studies), 0.07% to 1.2% for newly diagnosed cancer (five studies) and 0.44% to 20.2% for lung nodules (five studies).

In studies that evaluated screening for lung cancer, the range of the prevalence for incidental findings was 43.8% to 73% for lesions (three studies), 7% to 26.9% for significant findings (four studies), 0.92% for newly diagnosed cancer (one study) and 2.8% to 41.5% and 14.3% to 67.7% for coronary artery calcium (three studies).

The incidence of clinically significant findings was reported by diagnosis when detected in at least two studies.
**Authors' conclusions**
The review showed that 7.7% and 14.2% of patients who underwent screening with CT were found to have clinically significant incidental findings that required additional investigations.

**CRD commentary**
The authors addressed a clear research question with appropriate inclusion criteria. The search was limited, with no specific search for unpublished data. It was unclear whether studies published in languages other than English were not found or were excluded once identified. Therefore, neither publication nor language bias could be ruled out. Study selection was conducted in duplicate; no similar method to reduce error and bias during data extraction was reported. Study quality was not assessed and insufficient study details were provided for the reader to make an assessment. The decision to combine studies in a narrative synthesis seemed appropriate. Few studies were included and of those that were only six used multislice CT; most of the evidence for screening for coronary artery disease came from electron-beam computed tomography. Given the limitations identified, the conclusions should be treated with some caution.

**Implications of the review for practice and research**

**Practice:** The authors stated that there was a need for more uniform decision-making algorithms in dealing with incidental findings.

**Research:** Research with long-term follow-up of the full range of incidental findings was required.

**Funding**
Not stated.

**Bibliographic details**

**PubMedID**
18379305

**DOI**
10.1097/RCT.0b013e3181585ff2

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Calcinosis /diagnosis /epidemiology; Coronary Artery Disease /diagnosis /epidemiology; Humans; Incidental Findings; Lung Neoplasms /diagnosis /epidemiology; Mass Screening /methods; Prevalence; Radiography, Thoracic /methods; Tomography, X-Ray Computed /methods

**AccessionNumber**
12008103766

**Date bibliographic record published**
01/12/2008

**Date abstract record published**
02/12/2009

**Record Status**
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.