

Name of journal: World Journal of Radiology

ESPS Manuscript NO: 21477

Manuscript Type: Review

Computed tomography dose optimisation in cystic fibrosis: A review

Helena Ferris, Maria Twomey, Fiachra Moloney, Siobhan B O' Neill, Kevin Murphy, OJ O' Connor, Michael Maher

#### Abstract

Cystic Fibrosis (CF) is the most common autosomal recessive disease of the Caucasian population worldwide, with respiratory disease remaining the most relevant source of morbidity and mortality. CT is frequently used for monitoring disease complications and progression. Over the last fifteen years there has been a six-fold increase in the use of CT, which has lead to a growing concern in relation to cumulative radiation exposure. The challenge to the medical profession is to identify dose reduction strategies that meet acceptable image quality, but fulfil the requirements of a diagnostic quality CT. Dose-optimisation, particularly in CT, is essential as it reduces the chances of patients receiving cumulative radiation doses in excess of 100mSv, a dose deemed significant by the United Nations Scientific Committee on the Effects of Atomic Radiation. This review article explores the current trends in imaging in CF with particular emphasis on new developments in dose optimisation.

**Key words:** Cystic fibrosis; Computed tomography; Dose; Dose optimization; Ionising radiation; Radiology

#### Match Overview

1	Internet 267 words crawled on 26-May-2009 <a href="http://radiology.rsna.org">radiology.rsna.org</a>	3%
2	Internet 99 words crawled on 21-Feb-2011 <a href="http://www.ncbi.nlm.nih.gov">www.ncbi.nlm.nih.gov</a>	1%
3	CrossCheck 67 words O'Connor, O. J., M. Vandeleur, A. M. McGarrigle, N. Moore, S. R. McWilliams, S. E. McSweeney, M. O'Neill, M. N. Ch	1%
4	Internet 66 words crawled on 02-Jul-2008 <a href="http://www.ajronline.org">www.ajronline.org</a>	1%
5	Internet 66 words crawled on 12-Nov-2014 <a href="http://journal.publications.chestnet.org">journal.publications.chestnet.org</a>	1%
6	CrossCheck 46 words Ho, Immanuel K H, Brooks D Cash, Henry Cohen, Stephen B Hanauer, Michelle Inkster, David A Johnson, Micha	<1%
7	Internet 36 words crawled on 16-Aug-2014 <a href="http://www.cff.org">www.cff.org</a>	<1%
8	Internet 35 words crawled on 01-May-2012 <a href="http://bjr.birjournals.org">bjr.birjournals.org</a>	<1%
9	Internet 35 words crawled on 17-May-2013 <a href="http://erj.ersjournals.com">erj.ersjournals.com</a>	<1%
10	Internet 30 words crawled on 31-May-2015 <a href="http://www.patient.co.uk">www.patient.co.uk</a>	<1%

网页 图片 学术 高级搜索

### 'To CT or not to CT? That is the question': outcome surrogates for ...

[thorax.bmj.com/content/67/6/471.long](http://thorax.bmj.com/content/67/6/471.long)

Because CF is a multisystem disorder, patients are often required to undergo .... to review images that are of similar resolution and allowing unbiased scoring of ... is using revised CT scanning and dose optimisation techniques as described,....

### Pharmacodynamics and tolerability of high-dose, prolonged infusion ...

[www.sciencedirect.com/science/article/pii/S1755001709000803](http://www.sciencedirect.com/science/article/pii/S1755001709000803)

Cystic fibrosis (CF) is a disease marked by repeated acute pulmonary ... prolonged infusion carbapenems in adults with cystic fibrosis – A review of 3 cases ... Hartford, CT 06102 USA. <sup>d</sup> University of Connecticut, School of Medicine, Farmington, ... As antibiotic susceptibility declines, dose optimization must be considered to....

### Evaluation of dose reduction and image quality in chest CT using ...

[www.ncbi.nlm.nih.gov/pmc/articles/PMC3474005/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3474005/)

With 50% ASIR and a NI of 15, the effective radiation dose was reduced by ... The local institutional review board approved this study with a waiver of .... Strategies for CT radiation dose optimisation include tube current modulation, .... Development of low-dose protocols for thin-section CT assessment of cystic fibrosis in....

### [PDF] Development of Low-Dose Protocols for Thin-Section CT ...

[pubs.rsna.org/doi/pdf/10.1148/radiol.10100278](http://pubs.rsna.org/doi/pdf/10.1148/radiol.10100278)

(CT) protocols for assessment of cystic fibrosis (CF) in pediatric patients and ... After institutional review board approval and informed consent from patients or....

### References in Pediatric Computed Tomography Dose Optimization ...

[www.jmirs.org/article/S1939-8654\(15\)00145-9/references](http://www.jmirs.org/article/S1939-8654(15)00145-9/references)

Pediatric Computed Tomography Dose Optimization Strategies: A Literature Review ..... of image quality in a prospective study of children with cystic fibrosis.

### Pediatric Computed Tomography Dose Optimization Strategies: A ...

[www.researchgate.net/publication/278563765\\_Pediatric\\_Computed\\_Tomography\\_Dose\\_Op](http://www.researchgate.net/publication/278563765_Pediatric_Computed_Tomography_Dose_Op)

17 Jun 2015 ... However, CT dose optimization for pediatric patients could be more ... literature review was to identify and discuss the current pediatric CT dose....



[全部](#) [图片](#) [视频](#) [新闻](#) [购物](#) [更多 ▾](#) [搜索工具](#)

找到约 292,000 条结果 (用时 0.26 秒)

## Google 学术: Computed tomography dose optimisation in cystic fibrosis: A review

... of inhaled tobramycin in patients with cystic fibrosis - Ramsey - 被引用次数: 1030

Computed tomography—an increasing source of ... - Brenner - 被引用次数: 5135

... dose reduction with chest computed tomography using ... - Prakash - 被引用次数: 194

## References in Pediatric Computed Tomography Dose ...

[www.jmirs.org/article/S1939-8654\(15\)00145-9/references](http://www.jmirs.org/article/S1939-8654(15)00145-9/references) ▾ [翻译此页](#)

Pediatric Computed Tomography Dose Optimization Strategies: A Literature Review .....  
of image quality in a prospective study of children with cystic fibrosis.

## 'To CT or not to CT? That is the question': outcome ... - Thorax

[thorax.bmj.com/content/early/.../thoraxjnl-2011-201549.full](http://thorax.bmj.com/content/early/.../thoraxjnl-2011-201549.full) - [翻译此页](#)

作者: C Young - 2012 - 被引用次数: 3 - [相关文章](#)

2012年3月2日 - Because CF is a multisystem disorder, patients are often required to ....  
sites, enabling clinicians to review images that are of similar resolution and ... which is  
using revised CT scanning and dose optimisation techniques as ...

## References in A review of patient dose and optimisation ...

[www.ejradiology.com/article/S0720...7/references](http://www.ejradiology.com/article/S0720...7/references) - [翻译此页](#)

A review of patient dose and optimisation methods in adult and paediatric CT ..... R.

Estimation of the radiation dose from thoracic CT scans in a cystic fibrosis ...

## A review of patient dose and optimisation methods in adult ...

[www.ejradiology.com/article/S0720-048X\(11\)00506-7/fulltext](http://www.ejradiology.com/article/S0720-048X(11)00506-7/fulltext) ▾

Effective doses for paediatric head, chest and abdomen CT scanning reported ..... R.

Estimation of the radiation dose from thoracic CT scans in a cystic fibrosis ...

## PubMed Result

[www.ncbi.nlm.nih.gov/pubmed?linkname=pubmed...from...](http://www.ncbi.nlm.nih.gov/pubmed?linkname=pubmed...from...) - [翻译此页](#)

Review. PubMed PMID: 21042066. 3: Naidich DP, Pizzarello D, Garay SM, Müller NL. Is

[全部](#) [新闻](#) [视频](#) [图片](#) [更多 ▾](#) [搜索工具](#)

找到约 298,000 条结果 (用时 0.63 秒)

## Google 学术: [Computed tomography dose optimisation in cystic fibrosis: A review](#)

... of inhaled tobramycin in patients with [cystic fibrosis](#) - [Ramsey](#) - 被引用次数: 1032

[Computed tomography](#)—an increasing source of ... - [Brenner](#) - 被引用次数: 5152

... [dose reduction with chest computed tomography using ...](#) - [Prakash](#) - 被引用次数: 194

## References in Pediatric Computed Tomography Dose ...

[www.jmirs.org/article/S1939-8654\(15\)00145-9/references](http://www.jmirs.org/article/S1939-8654(15)00145-9/references) ▾ [翻译此页](#)

Pediatric [Computed Tomography Dose Optimization](#) Strategies: A Literature [Review](#) .....  
of image quality in a prospective study of children with [cystic fibrosis](#).

## References in A review of patient dose and optimisation ...

[www.ejradiology.com/article/S0720...7/references](http://www.ejradiology.com/article/S0720...7/references) - [翻译此页](#)

A [review](#) of patient [dose](#) and [optimisation](#) methods in adult and paediatric [CT](#) ..... R.  
Estimation of the radiation [dose](#) from thoracic [CT](#) scans in a [cystic fibrosis](#) ...

## PubMed Result

[www.ncbi.nlm.nih.gov/pubmed?linkname=pubmed...from...](http://www.ncbi.nlm.nih.gov/pubmed?linkname=pubmed...from...) - [翻译此页](#)

[Review](#). PubMed PMID: 21042066. 3: Naidich DP, Pizzarello D, Garay SM, Müller NL. Is thoracic [CT](#) ... Cumulative radiation exposure in children with [cystic fibrosis](#). Ir Med J. 2010 ... State of the art: technologies for [computed tomography dose](#) reduction. Emerg ... 13: Tack D. Radiation [dose optimization](#) in thoracic imaging.

## Cystic Fibrosis | Articles | Pediatrics in Review