Institute of Education

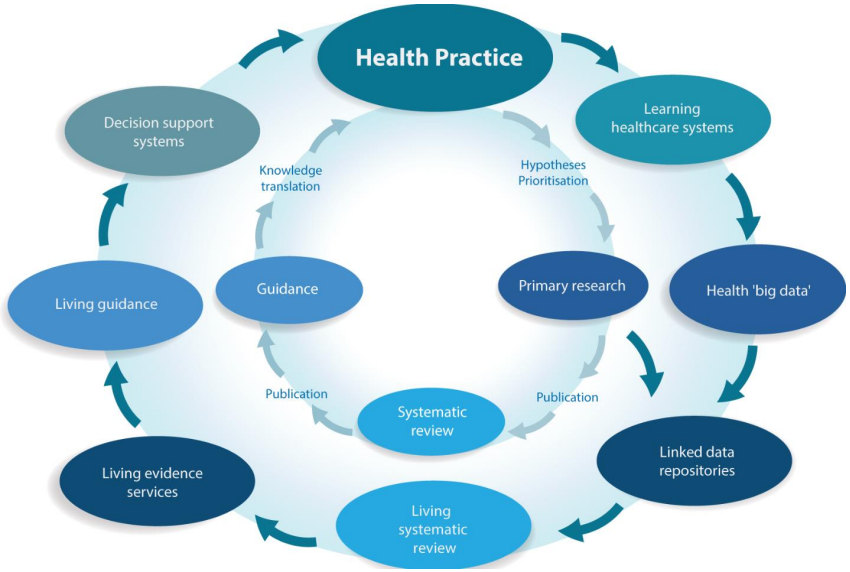
UCL

Cochrane Canada: Bringing 'Living Systematic Reviews' To Life Workshop, May 2017

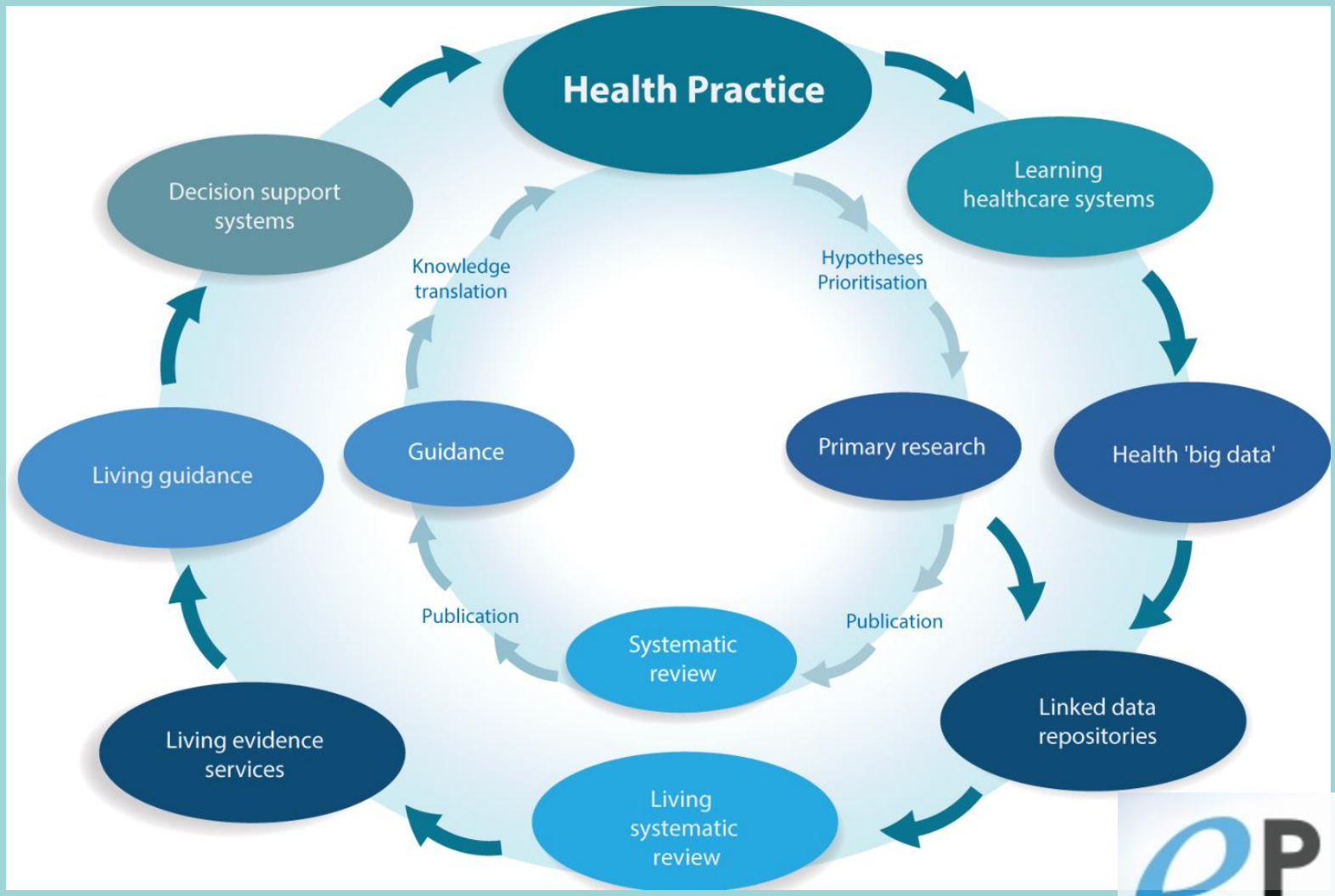
Enabling technologies for Living Systematic Reviews

State of the Science

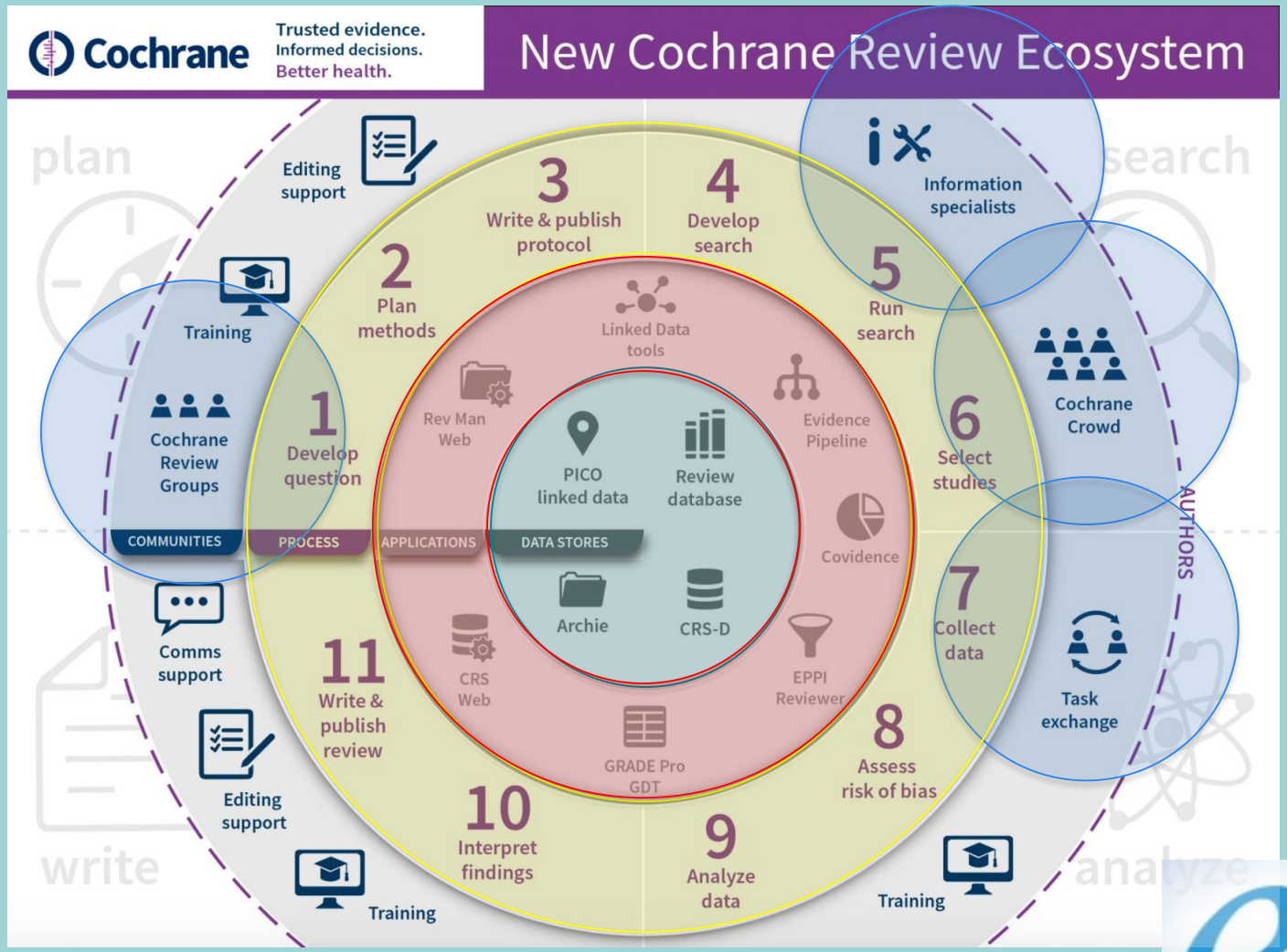
Ian Shemilt, EPPI-Centre, University College London, UK



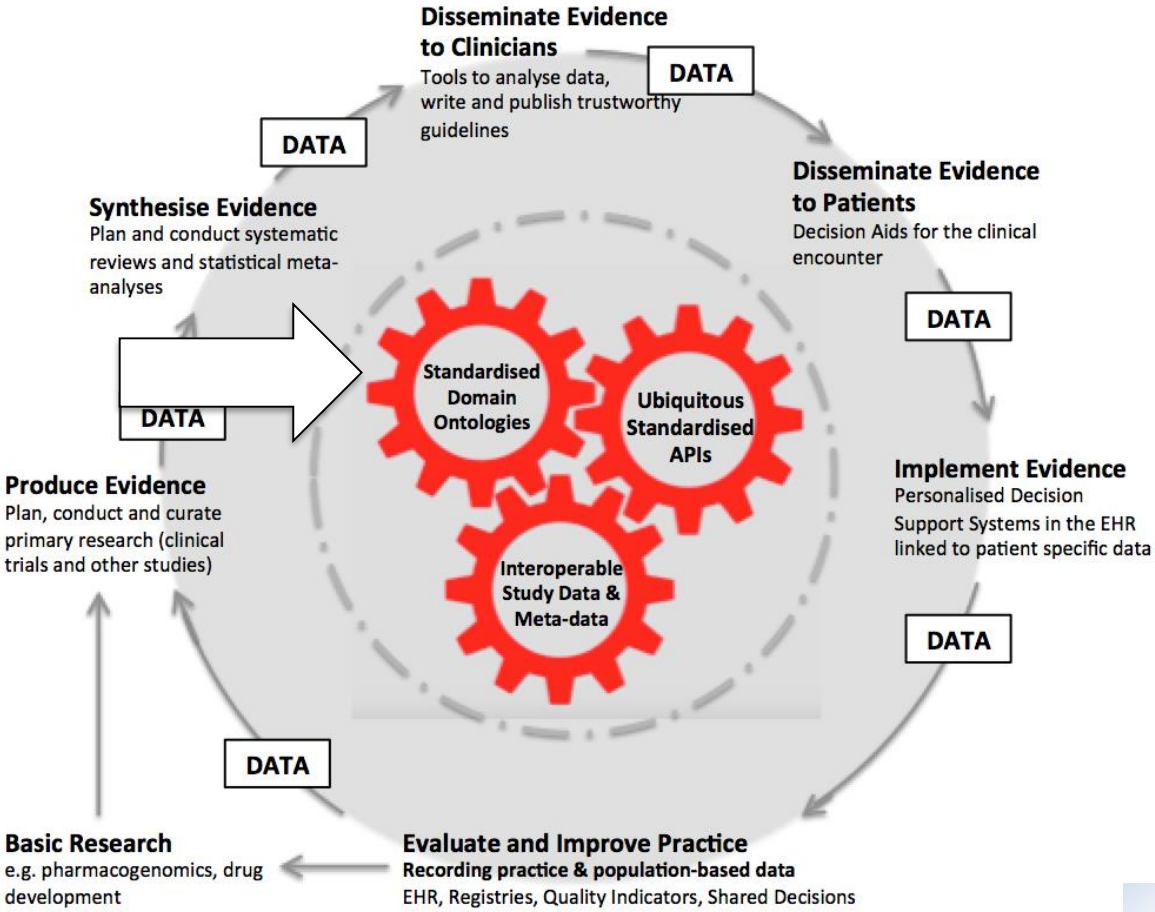
ePPI CENTRE



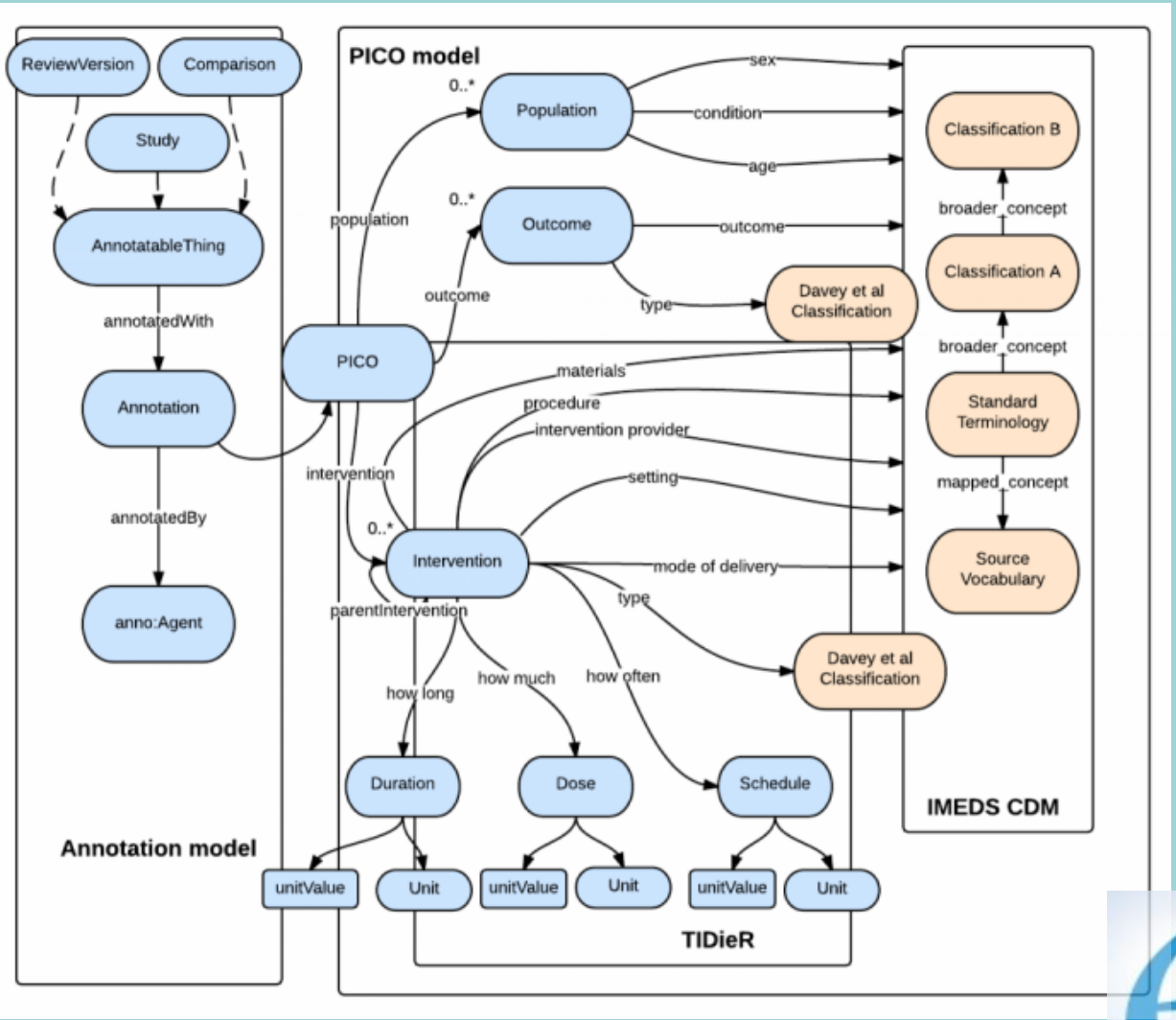
Elliott JH, Turner T, Clavisi O, Thomas J et al. (2014). PLoS Medicine 11 (2): e1001603



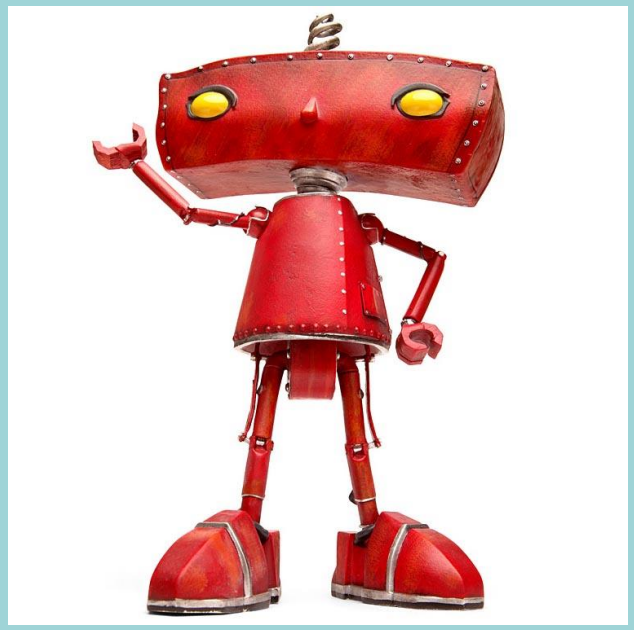
http://community.cochrane.org/review-production/cochrane-review-ecosystem



Brandt et al. BMJ. In Preparation; Shemilt et al. In Preparation



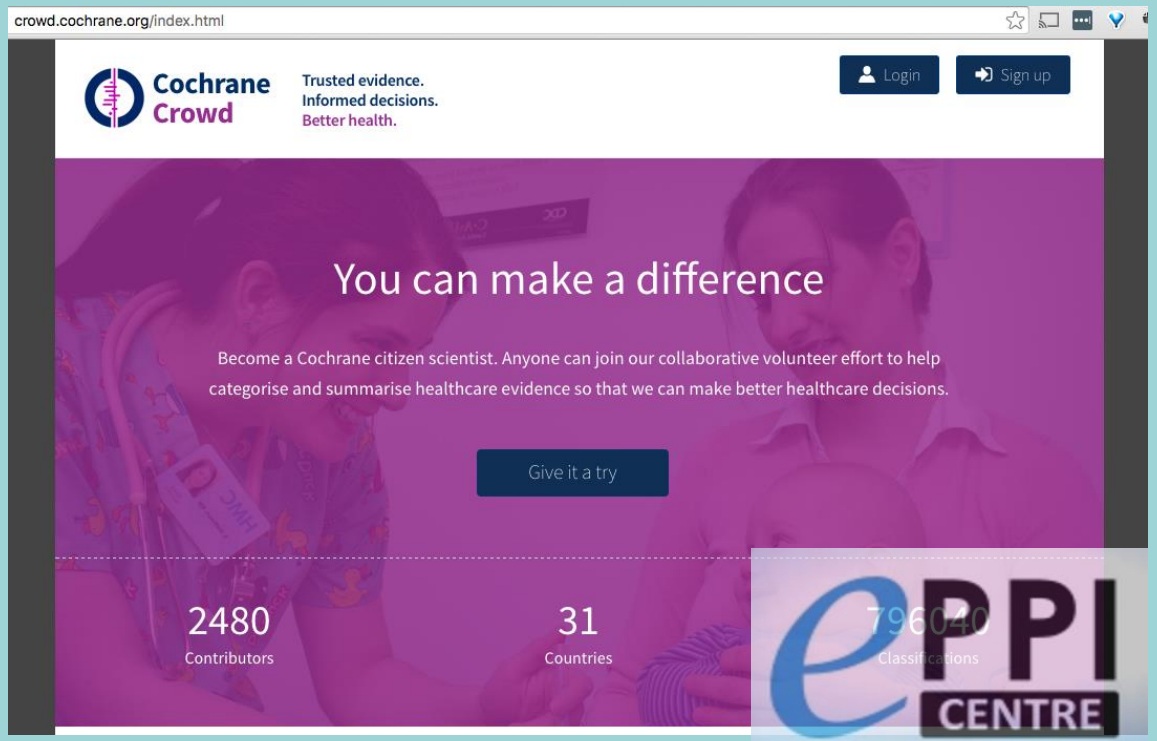
http://linkeddata.cochrane.org/pico-ontology



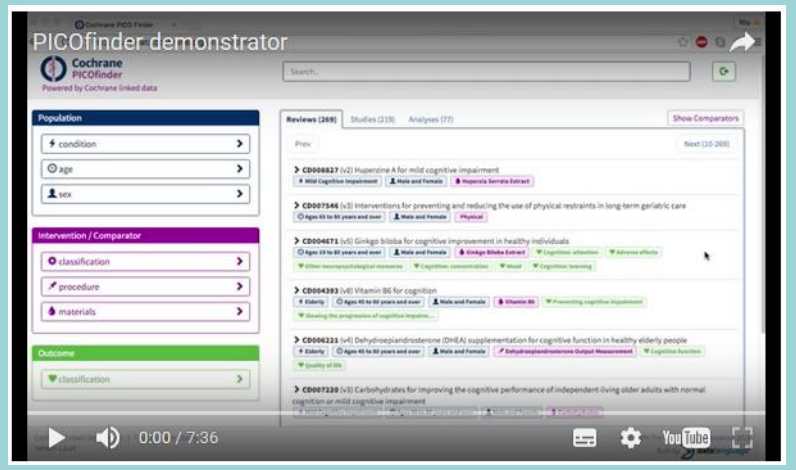
Through a combination of human and machine effort the aim is to identify and classify ALL trials using this system.

Identifying studies for LSRs* will then be a simple process of specifying the relevant PICO alert

* For RCTs



Demo – PICOFinder



https://uat-data.cochrane.org/pico-finder

Automation tools for LSR workflows

Study Identification
- Electronic search development
- Selecting studies (title-abstract &full-text screening)
  - Active learning (prospective)
  - ML classifiers (e.g. RCT classifier)
- Mapping research activity

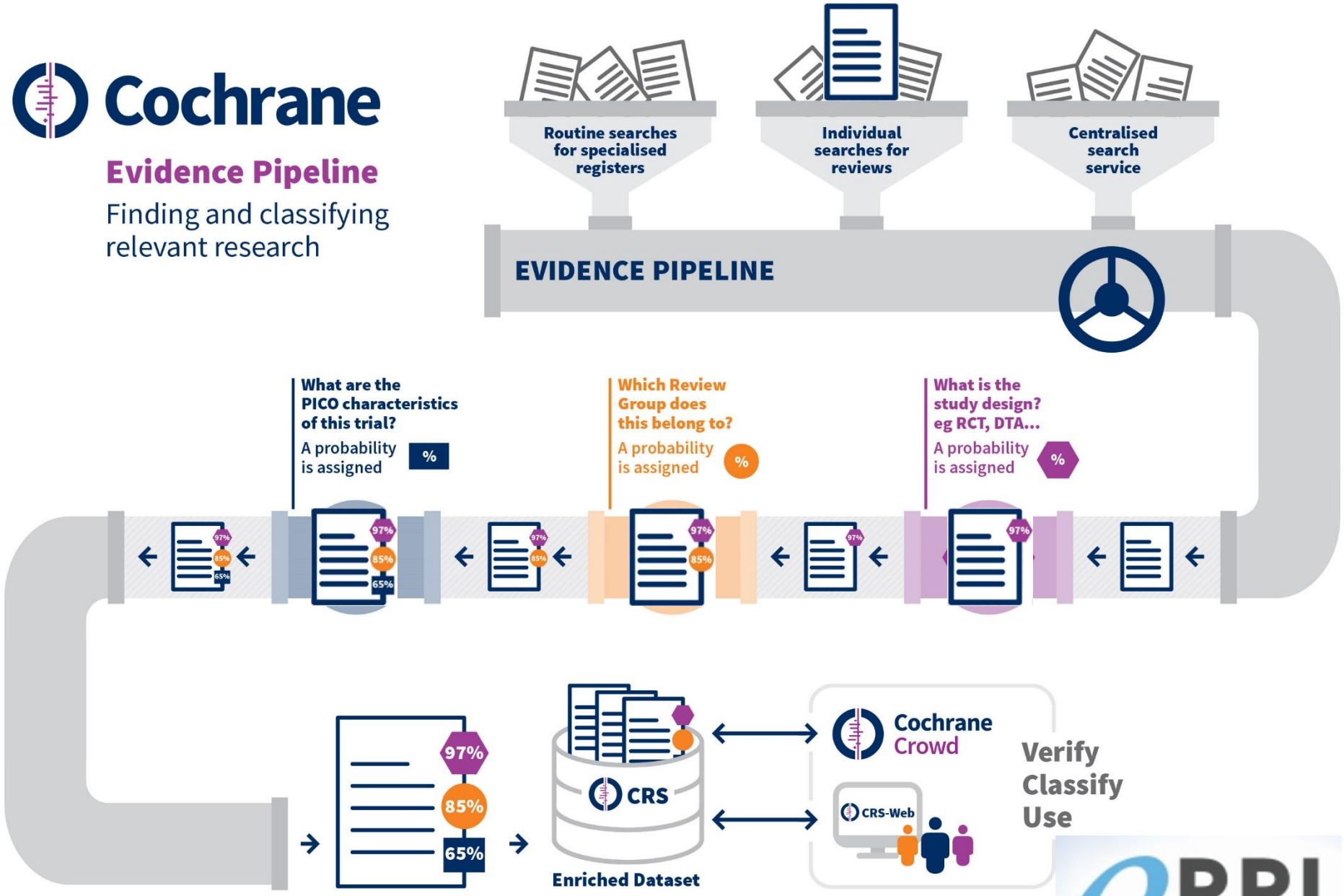
Data Extraction
- Risk of bias assessment
- Other study characteristics (e.g. PICO)
- Statistical outcome data

Synthesis and Sense-making
- Automated text generation (e.g. RevMAN HAL)
- Automated meta-analysis?
- Dynamic updating of iSoF tables?

Cochrane

Evidence Pipeline

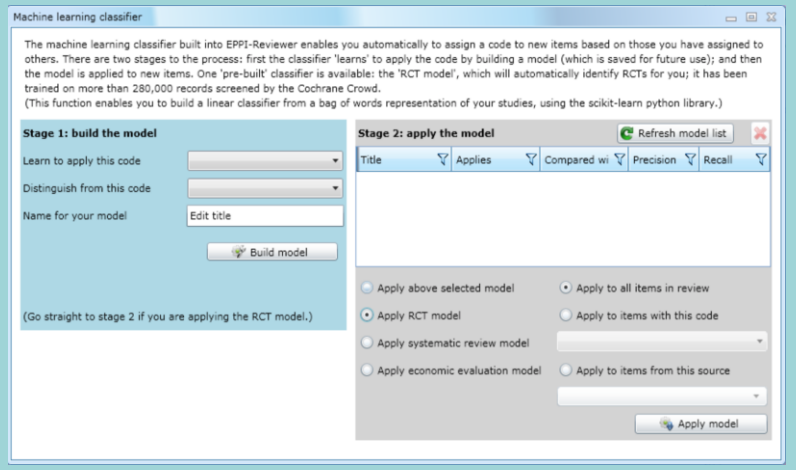
Finding and classifying relevant research



http://community.cochrane.org/tools/project-coordination-and-support/transform

EPPI CENTRE

Demo – RCT Classifer EPPI Reviewer



https://eppi.ioe.ac.uk/cms/er4/

Automation tools in LSR workflows

Study Identification
- Electronic search development
- Selecting studies (title-abstract &full-text screening)
  - Active learning (prospective)
  - ML classifiers (e.g. RCT classifier)
- Mapping research activity

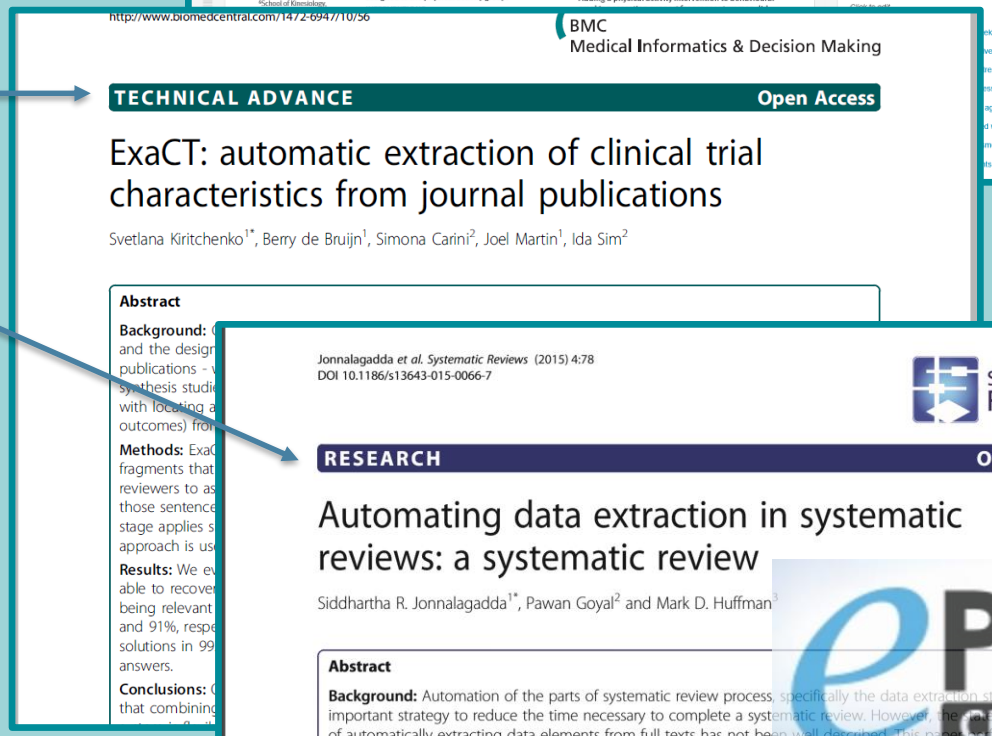
Data Extraction
- Risk of bias assessment
- Other study characteristics (e.g. PICO)
- Statistical outcome data

Synthesis and Sense-making
- Automated text generation (e.g. RevMAN HAL)
- Automated meta-analysis?
- Dynamic updating of iSoF tables?

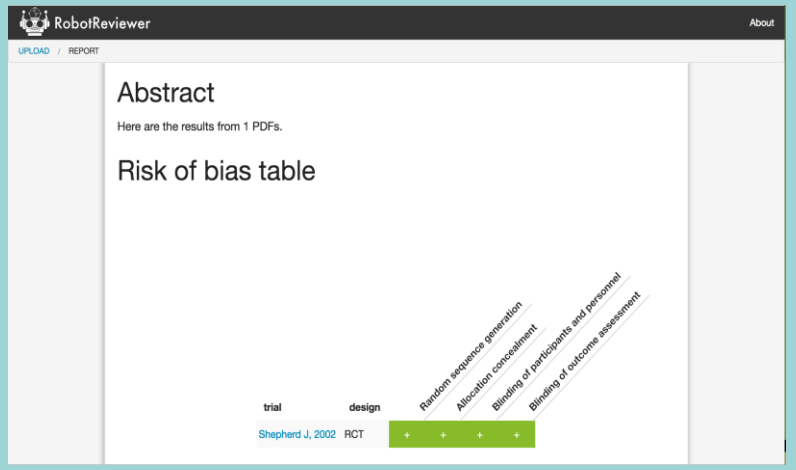
EPPI CENTRE

Data extraction

- RobotReviewer can identify phrases relating to study PICO characteristics and risk of bias
- ExaCT extracts trial characteristics (e.g. eligibility criteria)
- Systematic review found that no unified framework yet exists
- More evaluative work is needed on larger datasets
- Further challenges include extraction of data from tables and graphs



Demo – RobotReviewer



https://robot-reviewer.vortext.systems/

Automation tools in LSR workflows

Study Identification
- Electronic search development
- Selecting studies (title-abstract &full-text screening)
  - Active learning (prospective)
  - ML classifiers (e.g. RCT classifier)
- Mapping research activity

Data Extraction
- Risk of bias assessment
- Other study characteristics (e.g. PICO)
- Statistical outcome data

Synthesis and Sense-making
- Automated text generation (e.g. RevMAN HAL)
- Automated meta-analysis?
- Dynamically updated iSoF tables?

Institute of Education

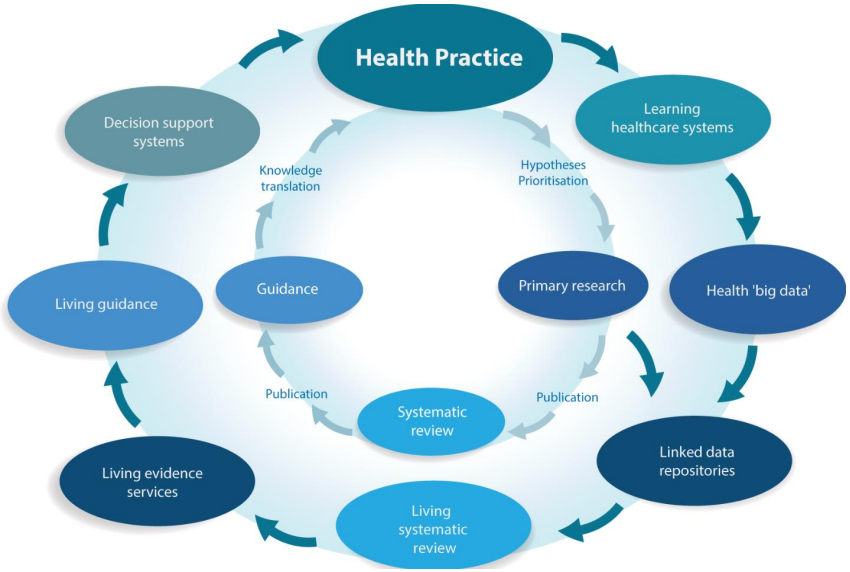
UCL

Cochrane Canada: Bringing 'Living Systematic Reviews' To Life Workshop, May 2017

Enabling technologies for Living Systematic Reviews

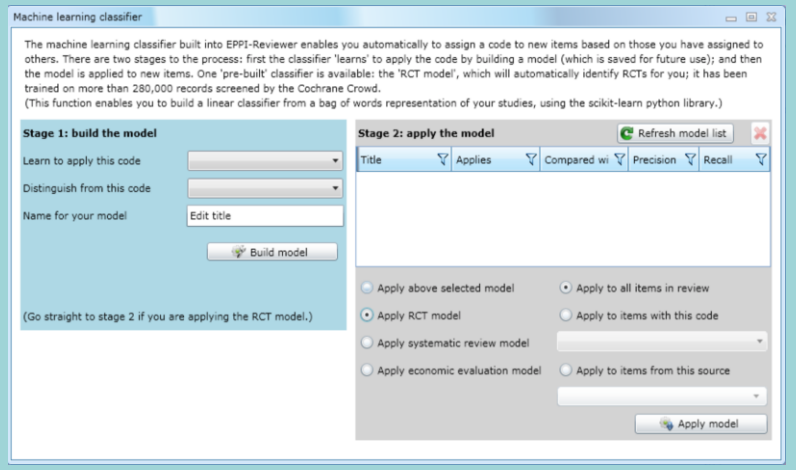
State of the Science

Ian Shemilt, EPPI-Centre, University College London, UK



ePPI CENTRE

Demo – RCT Classifer EPPI Reviewer



https://eppi.ioe.ac.uk/cms/er4/

Search History (19)

	# ▲	Searches	Results
	1	statin.ti,ab.	27765
	2	'crossover procedure'.de.	50347
	3	'double-blind procedure'.de.	133958
	4	'randomized controlled trial'.de.	439304
	5	'single-blind procedure'.de.	26234
	6	random*.de,ab,ti.	1336088
	7	factorial*.de,ab,ti.	56920
	8	crossover*.de,ab,ti.	80010
	9	(cross adj1 over*).de,ab,ti.	26114
	10	placebo*.de,ab,ti.	375736
	11	(doubl* adj1 blind*).de,ab,ti.	169392
	12	(singl* adj1 blind*).de,ab,ti.	19729
	13	assign*.de,ab,ti.	301872
	14	allocat*.de,ab,ti.	111271
	15	volunteer*.de,ab,ti.	217571
	16	or/2-5	494578
	17	or/6-16	1995817
	18	16 or 17	1995817
	19	1 and 18	8379

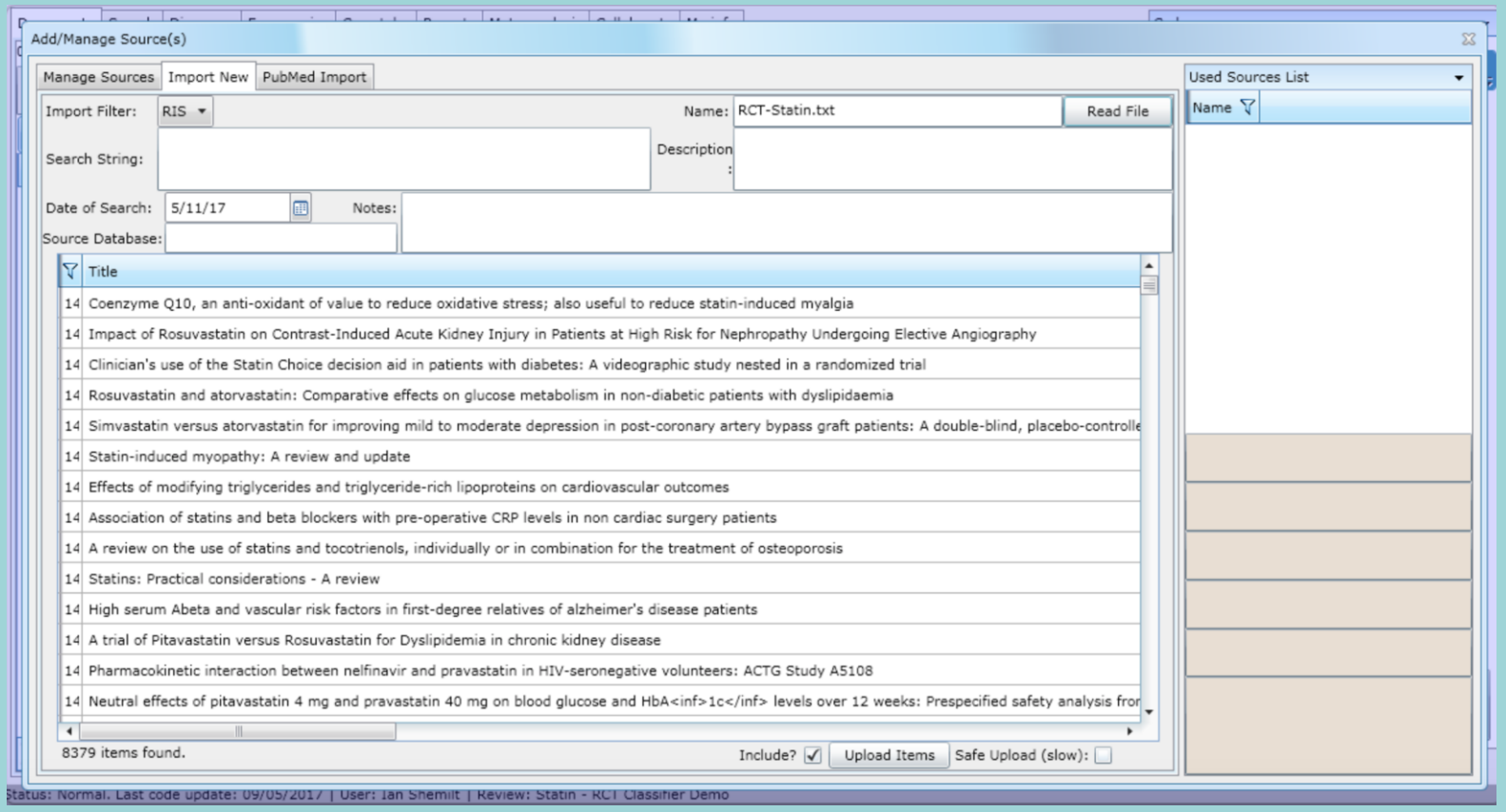
‘Statin’ and ‘RCT’ [filter]

RCT-Statin.txt

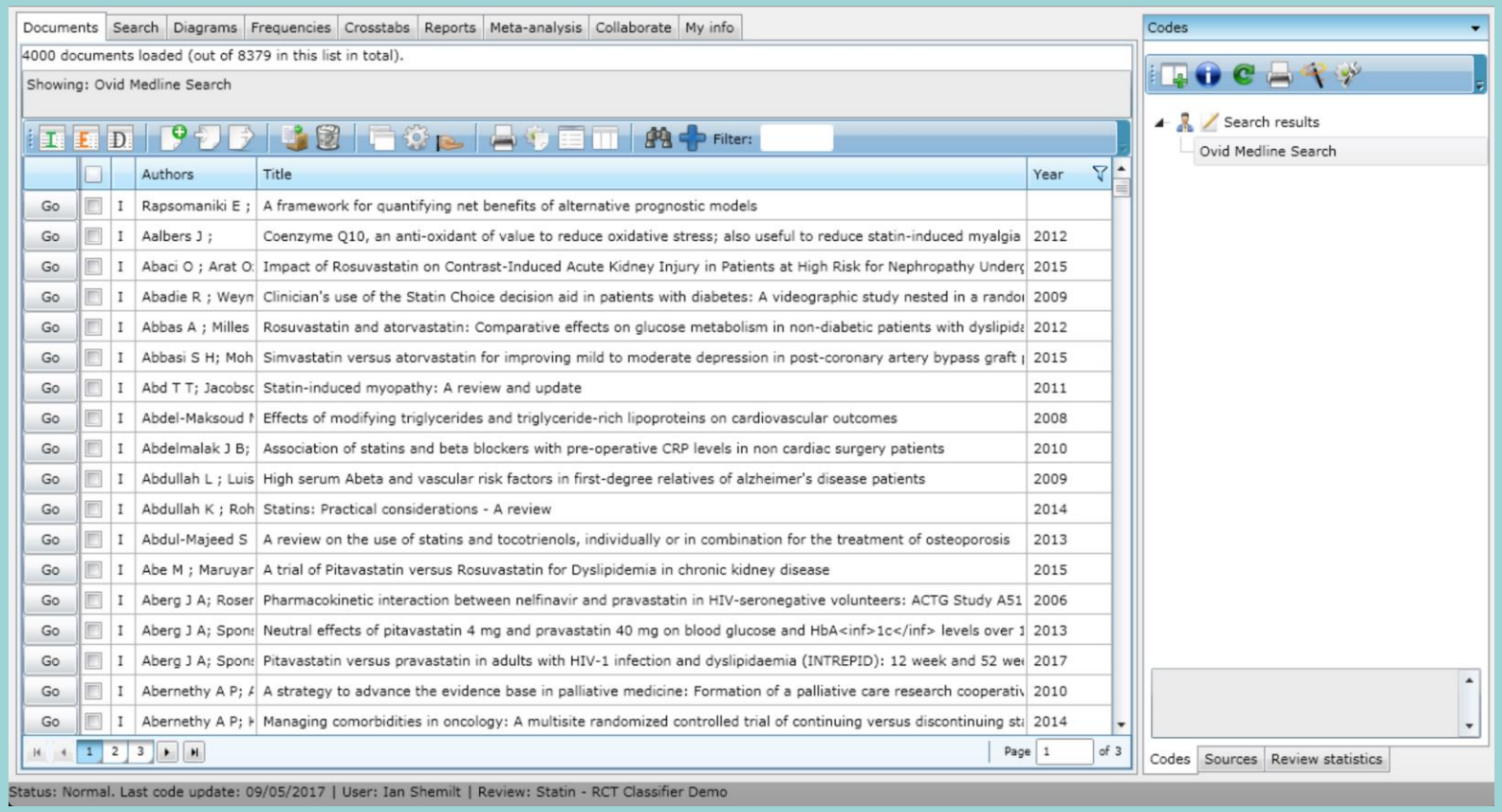
```
TY  - JOUR
AN  - 364701077
AU  - Aalbers, J.
DA  - April
DB  - Embase
DP  - Ovid Technologies
M1  - 3
PY  - 2012
SP  - 170
ST  - Coenzyme Q10, an anti-oxidant of value to reduce oxidative stress; also useful to reduce
statin-induced myalgia
T2  - Cardiovascular Journal of Africa
TI  - Coenzyme Q10, an anti-oxidant of value to reduce oxidative stress; also useful to reduce
statin-induced myalgia
UR  - http://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&D=emed14&AN=364701077
http://sfx.ucl.ac.uk/sfx_local?sid=OVID:embase&id=pmid:
22555643&id=doi:&issn=1995-1892&isbn=&volume=23&issue=3&spage=170&pages=170&date=2012&title=Ca
rdiovascular+Journal+of+Africa&atitle=Coenzyme+Q10%2C+an+anti-
oxidant+of+value+to+reduce+oxidative+stress%3B+also+useful+to+reduce+statin-
induced+myalgia&aulast=Aalbers
VL  - 23
ID  - 3582
ER  -


TY  - JOUR
AB  - Although statins have been shown to prevent contrast-induced acute kidney injury in
patients with acute coronary syndromes, the benefit of statins is not known for patients at
high risk for nephropathy who undergo elective coronary angiography. Two hundred twenty
consecutive statin-naive patients with chronic kidney disease (estimated glomerular filtration
rate <60 ml/min/1.73 m<sup>2</sup>) who underwent elective coronary or peripheral angiography
were randomly assigned to receive rosuvastatin (40 mg on admission, followed by 20 mg/day; n =
110) or no statin treatment (control group, n = 110). Contrast-induced acute kidney injury was
defined by an absolute increase in serum creatinine of >0.5 mg/dl or a relative increase of
>25% measured 48 or 72 hours after the procedure. Contrast-induced acute kidney injury
occurred in 15 patients (7.2%), 9 (8.5%) in the control group and 6 (5.8%) in the rosuvastatin
group (p = 0.44). The incidences of adverse cardiovascular and renal events (death, dialysis,
myocardial infarction, stroke, or persistent renal damage) were similar between the two groups
at follow-up. In conclusion, rosuvastatin did not reduce the risk for contrast-induced acute
kidney injury or other clinically relevant outcomes in at-risk patients who underwent coronary
and peripheral vascular angiography. Copyright © 2015 Elsevier Inc.
AD  - (Abaci, Arat Ozkan, Kocas, Cetinkal, Sukru Karaca, Baydar, Gurmen) Department of
Cardiology, Istanbul University Cardiology Institute, Istanbul, Turkey (Kaya) Department of
Biochemistry, Istanbul University Cardiology Institute, Istanbul, Turkey
AN  - 602076036
AU  - Abaci, O.
AU  - Arat Ozkan, A.
AU  - Kocas, C.
AU  - Cetinkal, G.
AU  - Sukru Karaca, O.
AU  - Baydar, O.
AU  - Kaya, A.
AU  - Gurmen, T.
DA  - 01 Apr
DB  - Embase
DP  - Ovid Technologies
```

> Import to EndNote

> RefMan (RIS) Export (.txt)



> Import to EPPI Reviewer



> Create code > Assign items to code