Online material

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eTable 1. Electronic Search Strategies

("Back Pain"[Mesh] OR "back pain"[tiab] OR backache[tiab] OR "back pains"[tiab] OR backaches[tiab] OR "back aches"[tiab] OR dorsalgia[tiab]) AND ("Guidelines as Topic"[Mesh] OR "Practice Guideline"[Publication Type] OR advice[tiab] OR treatment[tiab] OR options[tiab] OR policy[tiab] OR protocol[tiab] OR Guidelines[tiab] OR "decision tool"[tiab] OR "decision aid"[tiab] OR algorithm[tiab]) AND (((medical record) OR medical records) OR chart review) OR clinical audit (in all fields)

eTable 2. Eligibility criteria for included studies

Category	
Study	Include: Quantitative study designs (e.g. prospective/retrospective chart reviews. RCTs included if the control arm meets the 'Intervention' criterion. Exclude: Studies using data collected before 2000. Qualitative study designs. "Grey Research" such as theses, government reports, conference proceedings, articles not peer-reviewed.
Participants	Include: Studies that report GP or ED physicians' assessment and treatment of patients with LBP of any duration, aged 18 to 85 years. Exclude: Studies of other treatment providers (e.g. Specialists, Physiotherapists, Chiropractors, Pharmacists, etc.) Other related patient populations (e.g. arthritis, fibromyalgia, mixed chronic pain, neck pain, thoracic spinal pain).
Intervention	Include**:** Studies that describe the assessments, tests, treatments and/or referrals provided to patients with low back pain by GPs or ED physicians as part of routine care. Studies that aim to improve GP or ED physician assessment / treatment of low back pain only included if they have a control group in which usual GP/ED physician care has been provided.
Outcome Measures	• Assessment (e.g. red flag assessment, physical assessment) • Imaging (e.g. x-ray, MRI, CT scan) • Treatment (e.g. medication, advice) • Referral provided (e.g. specialist, physiotherapists, massage, chiropractor, multidisciplinary treatment)

eTable 3. Data from studies conducted in mixed settings

Author Year Country	Data collection	LBP Duration	Data Source	Sample	Denominator	Quality
Mixed settings						
Ivanova USA	2003-06	Mixed	HEDIS	211551	Per episode	High
Graves USA	2006-14	Acute	Worker's compensation database	761119	Per episode	High

HEDIS: Healthcare Effectiveness Data and Information Set

Image	Setting	Study	Measure	Proportion (95% CI)	Range of high quality estimates
X-ray	Mixed	Ivanova	Per consult	32% (32 to 32%)	**12 to 32%**
		Graves	Per claim	12% (11 to 13%)	
CT	Mixed	Ivanova	Per consult	1% (1 to 1%)	**1%**
		Graves	Per claim	1% (1 to 1%)	
MRI	Mixed	Ivanova	Per consult	18% (18 to 18%)	**18 to 21%**
		Graves	Per claim	22% (21 to 23%)	
Any	Mixed	Ivanova	Per consult	42% (41 to 42%)	**42%**

Medication	Setting	Study	Measure	Proportion (95%CI)	Range of high quality estimates
Paracetamol	Mixed	Ivanova	Per consult	8% (8 to 8%)	**8%**
NSAIDs	Mixed	Ivanova	Per consult	35% (35 to 35%)	**35%**
Muscle relaxants	Mixed	Ivanova	Per consult	27% (27 to 27%)	**27%**
Opioids, incl combination	Mixed	Ivanova	Per consult	42% (41 to 42%)	**42%**

Referrals	Setting	Study	Measure	Proportion (95% CI)	Range of high quality estimates
Physiotherapy	Mixed	Ivanova	Per consult	34% (34 to 34%)	**34%**
Chiropractor	Mixed	Ivanova	Per consult	39% (39 to 39%)	**39%**

eTable 4. Reporting guidelines

	Title /abstract				Intro		Methods																Results						Discussion					Other	
Study:	1. Study design – common term	1.1 Type of data, database names	1.2 geographic region, timeframe	1.3 database linkage	2. scientific rationale	3. objective / hypotheses	4. elements of study design	5. setting, time-periods	6. participant eligibility	6.1 participant selection (codes, etc.)	6.2 validation studies of codes	6.3 data linkage process	7. Outcome variable description	7.1 codes to classify outcomes	8. sources of data	9. effort to address bias	10. sample size calculation	11. how variables handled in analysis	12. Statistical methods	12.1 who created database	12.2 data cleaning methods	12.3 person- or institution-level data	13. participant flow	13.1 filtering based on data quality	14. demographic data, missing data	15. report outcome events over time	16. estimates and precision	17. other analyses done	18. key results relative to objectives	19. limitations, sources of bias	19.1 Confounding, misclassification	20. Cautious overall interpretation	21. generalizability	22. source of funding and role of funders	22.1 access to supplementary info
Lee	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	x	x	✓	✓	✓	x	✓	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓
Potier	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	x	x	x	x	✓	x	✓	✓	✓	x	x	✓	✓	x	x	✓	✓	✓	✓	x	x	✓	x	✓	✓
Rao 2015	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	x	✓	x	x	✓	x	x	✓	x	x	✓	x	✓	✓	✓	x	✓	✓	✓	✓	✓	x	✓
Friedman	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	x	x	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bishop2006	✓	✓	x	x	✓	✓	✓	✓	✓	x	x	x	✓	✓	✓	✓	X	✓	✓	x	x	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	x
Bishop 2003	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	x	x	✓	✓	✓	✓	x	✓	x	✓	x	✓	✓	x	x	✓	x	✓	✓	✓	✓	✓	x	x
Chen*	✓	✓	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	✓	x	x	x	x	x	✓	x	x	x	x	x	x	x
Ivanova	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	x	x	✓	✓	✓	x	✓	✓	✓	x	x	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lin	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	x	✓	✓	x	✓	x	✓	✓	x	✓	✓	✓	x	✓	x	✓	✓	✓	✓	✓	✓	✓	✓
Mafi	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	x	x	✓	✓	x	✓	✓	✓	✓	✓	✓	x	✓	✓	✓	✓

Michaleff	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	x	✓	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓
Muntion**	✓	✓	?	x	✓	✓	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	✓	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Piccoliori	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	x	x	✓	✓	✓	x	✓	✓	✓	✓	✓	X	✓	✓	✓	✓
Ramanathan	✓	✓	✓	?	✓	✓	✓	✓	✓	✓	x	x	✓	x	✓	✓	✓	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rego	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	x	x	✓	✓	✓	✓	✓	x	x	x	x	✓	✓	x	x	✓	x	✓	✓	x	x	x	✓	✓	✓
Breen	✓	✓	x	x	✓	✓	✓	✓	✓	✓	x	x	✓	✓	✓	x	x	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	x	✓	✓	x
Crow	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	x	x	✓	x	✓	x	x	✓	x	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	x
Fritz	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	x	✓	x	✓	**x**	x	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	x
Graves	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	x	x	✓	✓	✓	x	x	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Kale	✓	✓	✓	x	✓	✓	✓	✓	✓	x	x	x	✓	x	✓	x	x	✓	✓	x	x	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x
Kovacs	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	x	✓	✓	x	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓	✓	x	x
Nunn	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rizzardo	✓	✓	x	x	✓	✓	✓	✓	✓	x	x	x	✓	x	x	x	x	x	✓	x	x	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	x	✓	✓	✓	x
Williams	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	x	x	✓	x	✓	x	x	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x
Raja	✓	✓	x	x	✓	✓	✓	✓	✓	x	✓	x	✓	x	✓	✓	✓	x	x	x	x	✓	x	x	✓	✓	✓	✓	✓	✓	x	x	x	x	✓	x
Schlemmer	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	x	x	✓	✓	✓	x	✓	✓	✓	x	✓	✓	?	?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Suman	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	x	x	x	x	✓	✓	x	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Zafar	✓	✓	✓	x	✓	✓	✓	✓	✓	x	x	x	✓	x	✓	✓	✓	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	X

"✓" means study reported this item, "x" means study did not report this item

*abstract only

**study was in Spanish

eTable 5. Risk of Bias

Study	Representativeness	Patient misclassification	Outcome misclassification	Inconsistent data	Precision	Quality score
Rego	Yes	Yes	Yes	Yes	No	4
Piccoliori	Yes	Yes	Yes	Yes	Yes	5
Kale	Yes	No	Yes	Yes	No	3
Mafi	Yes	Yes	Yes	Yes	Yes	5
Michaleff	Yes	Yes	Yes	Yes	Yes	5
Breen	Yes	Unclear	Unclear	Yes	Yes	3
Williams	Yes	No	Yes	Yes	Yes	4
Crow	No	Yes	Yes	No	Yes	2
Lin	Yes	Unclear	Yes	Yes	No	3
Ramanathan	Yes	Unclear	Unclear	Yes	Yes	3
Chen	Unclear	No	Unclear	Yes	No	1
Bishop b	Yes	No	Yes	Yes	No	3
Muntion-Alfaro	Yes	No	No	Yes	Yes	3
Bishop a	Yes	No	Yes	Yes	No	3
Fritz	Yes	Yes	No	Yes	Yes	4
Suman	Yes	Yes	No	Yes	Yes	4
Zafar	Yes	No	No	Yes	Yes	3
Friedman	Yes	Yes	Yes	Yes	Yes	5
Potier	Yes	Yes	No	Yes	No	3
Rao	Yes	Unclear	No	Yes	No	2
Nunn	Yes	Yes	No	Yes	No	3

Raja	Yes	Yes	Yes	Yes	Yes	5
Schlemmer	Yes	Yes	Yes	Yes	Yes	5
Rizzardo	Yes	No	No	Yes	Yes	3
Ivanova	Yes	Yes	Yes	Yes	Yes	5
Graves	Yes	Yes	Yes	Yes	Yes	5

Bolded studies indicate high quality

Representativeness: did not have any unusual exclusion criteria + if database: they should use a census, consecutive or random sample.

Patient misclassification: provided the specific inclusion criteria or database codes (if using an existing database) or the method used to recruit patients into the study.

Outcome misclassification: provided a description of the selection methods for outcome measurement (e.g. imaging codes)

Inconsistent data: this is due to how the data was reported, etc. what denominators were used or proxies.

Precision: width of 95% CI is less than or equal to 5%

eTable 6. Rates of assessment

Assessment	Setting	Study	Measure	Proportion (95%CI)
Red flags	Family practice	Bishop a	Per physician	5% (1 to 9%)
		Bishop b	Per patient	5% (2 to 9%)
		Chen[2]	Per patient	34% (25 to 44%)
		Muntion-Alfaro	Per patient	55% (50 to 59%)
	ED	Potier	Per patient	64% (54 to 73%)
Neurological examination	Family practice	Ramanathan	Per episode	20% (17 to 23%)
		Chen	Per patient	46% (37 to 56%)
		Bishop b	Per patient	63% (55 to 71%)
		Bishop a	Per physician	63% (55 to 71%)
	ED	Potier	Per patient	9% (5 to 16%)
Physical examination	Family practice	Chen	Per patient	46% (37 to 56%)
		Ramanathan	Per episode	47% (44 to 50%)
		Bishop b	Per patient	91% (86 to 96%)
	ED	Potier	Per patient	36% (27 to 46%)
History	Family practice	Ramanathan	Per episode	82% (79 to 84%)
		Bishop a	Per physician	89% (84 to 94%)
	ED	Potier	Per patient	27% (19 to 36%)