

Estimating exacerbation rates from routine UK primary care data: an exploratory validation from the IMP²ART programme

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Background

Supported self-management for asthma reduces use of healthcare resources, improves asthma control and quality of life.

Pinnock H, et al, for the PRISMS group *BMC Medicine* 2017;15:64



Methods



500 sets of records (50 from each of 10 practices)

VS



We tested the sensitivity and specificity of groups of clinically relevant read codes for an unscheduled asthma care (and other outcomes) within the study year.

Example of codes

Precise codes e.g. H333. Acute exacerbation of asthma
Imprecise codes e.g. R0609 Wheezing
Treatment codes e.g. fe6h. Prednisolone 5m
Combinations of codes e.g. 'Exacerbation' or 'wheezing'

We looked for the best combination of codes in terms of sensitivity and specificity for use as an outcome measure.



Aim

- To determine the accuracy of codes for detecting exacerbation (and other outcomes) in routine primary care data compared to data extracted by inspecting the record.
- To explore alternative codes and proxies to improve accuracy.



Results

Demographics: Mean age: 50 yrs (SD 20 yrs) 59% female

Unscheduled healthcare in the 'gold standard' data

33% had an unscheduled primary care consultation

2% had attended A & E

1% had been admitted to hospital

34% had any unscheduled care (primary care/A&E/hospital)

Provision of action plans

Codes	Sensitivity	Sensitivity Confidence Interval	Specificity	Specificity Confidence Interval
Precise codes	0%	(0%, 0%)	100%	(99%, 100%)
+Imprecise codes	34%	(18%, 54%)	95%	(92%, 96%)

Routine review

Codes	Sensitivity	Sensitivity Confidence Interval	Specificity	Specificity Confidence Interval
Precise codes	47%	(41%, 52%)	98%	(94%, 100%)
+Imprecise codes	58%	(52%, 63%)	97%	(93%, 99%)
+RCP3Q codes	86%	(82%, 90%)	97%	(92%, 99%)

Results

Unscheduled primary care

Codes	Sensitivity	Sensitivity Confidence Interval	Specificity	Specificity Confidence Interval
Precise codes	19%	(1%, 26%)	97%	(95%, 98%)
+Imprecise codes	35%	(27%, 42%)	83%	(79%, 87%)
+steroid course codes	72%	(64%, 78%)	81%	(76%, 86%)

A&E and hospital admissions



Sensitivity for A&E visits and hospital admissions was <9%.



Asthma A&E and hospital admissions were recorded using the same codes as unscheduled primary care visits.

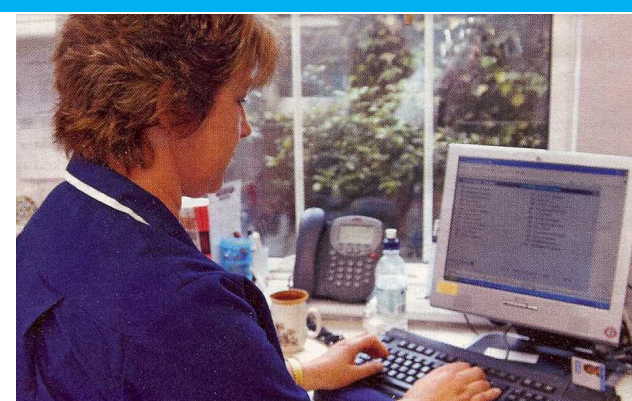
All unscheduled care

Hospital admissions + A&E + unscheduled primary care

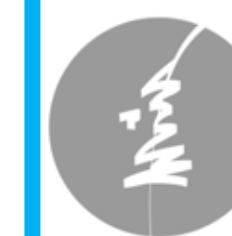
Sensitivity 71% (CI 63% to 80%)

Specificity 82% (CI 77% to 86%)

Conclusions and implications



- We have optimised algorithms of codes to best detect unscheduled care from read codes in routine UK primary care records.
- Unscheduled care can be used in trials as long as the intervention doesn't change coding behaviour
- Provision of action plans has a poor accuracy and cannot be used as an outcome in trials.
- In addition, it is likely that the IMP²ART intervention will influence coding of action plan ownership



Implications for power calculations

- Need to use statistics based on predicted outcomes not literature as could be different.
- Large inter practice variation in coding -> Larger sample size