## Detailed guide to article extraction

This section shows the detailed guide to extraction that was used by readers.

| $\quad$ Form 1: Basic |
| :--- |
| Record Number |
| Number of assigned article |
| Journal |
| Enter the full name of the journal- do not use abbreviations |
| Journal Type |
| General Medical |
| Journals aimed at advancement in the medical field, without a specific focus on a particular medical |
| specialty |
| Ex: British Medical Journal, JAMA, Lancet, Journal of Advanced Nursing |
| Specialty |
| Journals aimed at advancement in a particular field or topic of medicine |
| Ex: American Journal of Clinical Nutrition, Diabetes Care |
| Publication Year |
| YYYY format |
| Publication Year Category |
| Select the category that encompasses the publication year |
| 2000-2004 |
| 2005-2009 |
| 2010-2014 |
| Funding Source |
| Select all that apply |
| This can often be found at the end of the article in a section preceding references entitled "Funding" |
| or "Acknowledgements" |
| Industry includes |
| For-profit company, donation of study product by a for-profit company which manufactured the study |
| product |
| Not - for profit company that promoted the intervention |
| Non-Industry includes |
| Government: National, regional (provincial, county) government body with NO industry association. |
| Foundation / Philanthropies: examples include Rockefeller foundation, Bill and Melinda Gates |
| foundation. |
| Institution: University, Research centers, teaching and academic hospitals. |
| Other non-industry source of funding. |
| Not Reported |
| No source of funding is disclosed in study report. |
| Country |
| Country of first author affiliation |
| Region |
| Select the geographic region of the country the article was published |
| Is this study reported to be a registered clinical trial? |
| Check all that apply |
| No |
| Yes- clinicaltrials.gov |
| Yes- other registry |
| Do authors report where to access to the study protocol? |
| Yes if authors provide directions to accessing the study protocol |

[Type here]

## Form 2: Intervention Details

## Is the trial selection targeting individuals with multiple chronic conditions?

## No

Participants are selected based on their diagnosis of only one chronic condition
Ex: All individuals in the study sample must have diabetes
Yes, individuals with a specific set of chronic conditions
Participants are selected based on their diagnosis of a specified set of 2 or more chronic conditions
Ex: All individuals in the study sample must have diabetes and hypertension
Yes, individuals with multiple chronic conditions, regardless of conditions
Participants are selected based on their diagnosis of 2 or more chronic conditions, regardless of specific combination of conditions
Ex: All individuals in the study sample must have 2 chronic conditions
Yes, individuals with any combination of chronic conditions within a specific set of conditions
Participants are selected based on their diagnosis of 2 or more chronic conditions, within a specified set of chronic conditions. Multiple combinations are possible.
Ex: All individuals in the study sample must have 2 or more of the following chronic conditions: depression, hypertension, diabetes, arthritis, and chronic heart failure.
Is the trial selection targeting individuals with one condition from a specific set of chronic conditions?
Please note that these trials may include people with multiple chronic conditions, but do not require patients to have multiple chronic conditions.
No, all participants have the same chronic condition
Yes, participants must have at least one chronic condition from a specified set of chronic conditions.
Ex: Each participant must have one of the following conditions: diabetes, hypertension or depression.
The study sample consists of individuals with which chronic condition?
Check each of the chronic condition(s) used for selecting patients in the trial
Arthritis
Includes:
Ankylosing Spondylitis (AS)
Ehlers-Danlos Syndrome (EDS)
Gout
Osteoarthritis
Psoriatic Arthritis
Reactive Arthritis
Rheumatoid Arthritis
Sjögren's Syndrome
Asthma
Any condition referred to as asthma
Autism spectrum disorder
Includes:
Asperger's Syndrome
Autistic Disorder
Pervasive Developmental Disorder not otherwise specified (PDD-NOS)
Cancer
All cancers except nonmelanoma skin
Cardiac arrhythmias
Includes:

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Bradyarrhythmias
Supraventricular arrhythmias
Ventricular arrhythmias
*rrhythmia
Chronic kidney disease (CKD)
Includes:
Chronic renal disease
End stage renal disease (ESRD)
End stage renal failure (ESRF)
End-stage kidney disease (ESKD)
Chronic kidney failure (CKF)
Chronic renal failure (CRF)
DIAGNOSTIC INFO:
Individuals with a glomerular filtration rate (GFR) <60 ml/min}/1.73 \mp@subsup{\textrm{m}}{}{2}\mathrm{ for 3 months are classified
as having chronic kidney disease
All individuals with kidney damage are classified as having chronic kidney disease
\begin{tabular}{|l|l|}
\hline \begin{tabular}{l} 
CKD \\
stage
\end{tabular} & \begin{tabular}{l} 
GFR level (mL/min/1.73 \\
\(\left.\mathbf{m}^{2}\right)\)
\end{tabular} \\
\hline Stage 1 & \(\geq 90\) \\
\hline Stage 2 & \(60-89\) \\
\hline Stage 3 & \(30-59\) \\
\hline Stage 4 & \(15-29\) \\
\hline Stage 5 & \(<15\) \\
\hline
\end{tabular}
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## Chronic obstructive pulmonary disease (COPD)

## Includes:

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Emphysema
Chronic bronchitis
Chronic obstructive lung disease (COLD)
Chronic obstructive airway disease (COAD)
DIAGNOSTIC INFO:
May be confirmed with spirometry, which measures forced expiratory volume in 1 second ( \(\mathrm{FEV}_{1}\) ), and forced vital capacity (FVC).
\(\mathrm{FEV}_{1} /\) FVC ratio \(<70 \%\) (or sometimes <80\%)
Congestive heart failure (CHF)
Includes:
Left ventricular failure
Systolic (congestive) heart failure
Diastolic (congestive) heart failure
Combined systolic (congestive) and diastolic (congestive) heart failure
DIAGNOSTIC INFO:
May be based on blood test for elevated B-type natriuretic peptide (BNP)
BNP levels \(>300 \mathrm{pg} / \mathrm{mL}\) indicate the presence of CHF
Coronary artery disease (CAD)
Includes:
Coronary arteriosclerosis
Coronary atherosclerosis
Ischemic heart disease
Coronary heart disease
Dementia
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Includes:
Alzheimer's
Other senile dementias
Depression
Includes:
Any condition referred to as depression
Presence of depressive symptoms
Type II Diabetes
Does not include: Type I diabetes or Gestational diabetes
DIAGNOSTIC INFO:
Can be diagnosed with glucose test (fasting or 2 hour), or based on glycated hemoglobin (HbA1c) level

| Condition | 2 hour <br> glucose | Fasting <br> glucose | HbA $_{\mathbf{1 c}}$ |  |
| :---: | :---: | :---: | :---: | :---: |
| Unit | $\mathrm{mmol} / \mathrm{l}(\mathrm{mg} / \mathrm{dl})$ | $\mathrm{mmol} / \mathrm{l}(\mathrm{mg} / \mathrm{dl})$ | $\mathrm{mmol} / \mathrm{mol}$ | DCCT \% |
| Diabetes mellitus | $\geq 11.1(\geq 200)$ | $\geq 7.0(\geq 126)$ | $\geq 48$ | $\geq 6.5$ |

## Hepatitis

Any condition referred to as hepatitis
Human immunodeficiency virus (HIV)
Includes: AIDS
Hyperlipidemia
AKA: High blood cholesterol
Includes:
Dyslipidemia
Hypercholesterolemia
Hypertriglyceridemia
Hyperlipoproteinemia
Dyslipoproteinemias
Inferred when a patient is prescribed cholesterol-lowering medications (statins)
DIAGNOSTIC INFO:
Total cholesterol
Total cholesterol level greater than or equal to $240 \mathrm{mg} / \mathrm{dL}(6.21 \mathrm{mmol} / \mathrm{L})$ is high.
Triglycerides
High - 200 to $499 \mathrm{mg} / \mathrm{dL}$ ( 2.25 to $5.63 \mathrm{mmol} / \mathrm{L}$ )
Very high - greater than $500 \mathrm{mg} / \mathrm{dL}(5.65 \mathrm{mmol} / \mathrm{L})$
Hypertension (HTN)
AKA: High blood pressure
Defined as when systolic pressure is consistently greater than 140 mm hg or when diastolic pressure is consistently 90 mm hg or more.
Inferred when a patient is prescribed anti-hypertensives, such as ACE Inhibitor (ACEI) or Angiotensin II receptor blockers (ARB)
DIAGNOSTIC INFO:

| Classification | Systolic pressure |  | Diastolic <br> pressure |  |
| :--- | :--- | :--- | :--- | :--- |
|  | $\mathbf{m m H g}$ | kPa | $\mathbf{m m H g}$ | kPa |
| Stage 1 hypertension | $140-159$ | $18.7-$ | 21.2 | $90-99$ | | $12.0-$ |
| :--- |
| Stage 2 hypertension |

[Type here]

[Type here]

## Sample Age Measures Reported

Select all that apply
Mean
Range
Standard Deviation
Median
Not reported

## Could the mean age studywide be calculated?

Yes if the mean age of participatns in the study was not reported, but can be calculated from the reported means for each study arm.

## Could the age range studywide be calculated?

Yes if the age range of participatns in the study was not reported, but can be determined from the reported age ranges for each study arm.

## Mean

Average age of study sample (reported or calculated).
Often reported in Table 1 of Baseline Characteristics

## Range_Lower

The age of the youngest participant enrolled in this study sample (reported or calculated).

## Range_Upper

The age of the oldest participant enrolled in this study sample (reported or calculated).

## Standard Deviation

Abbreviated SD
Often reported in Table 1 of Baseline Characteristics, along with the mean

## Median

Median age of study sample reported

## Calculated Studywide Sample Size

Field calculated automatically from the number of reported participants in each study arm.

## Studywide Sample Size

Number of participants randomized in the study (reported or calculated).
What is the behavioral component of the intervention?
This describes the behavioral component utilized in the main intervention (and is not necessarily the same as the target outcome)
Weight management/diet/physical activity
Any intervention manipulating participants' behaviors related to weight control, diet, or physical activity

## Tobacco habits

Any intervention manipulating participants' behaviors related to smoking or consuming tobacco Adherence to disease management
Any intervention directly influencing the participant's disease management behavior (in terms of taking medications or monitoring clinical measures, such as glucose) consistent with medical or health advice. Do not include behaviors such as exercising that may improve disease outcomes, as they are not directly related to disease management.

## Psychological well-being

Any intervention utilizing methods (such as relaxation techniques, stress management, pain management, etc) primarily targeting the participant's psychological well-being (stress, anxiety, depression, social support, pain/discomfort, etc)
Other
The intervention influenced/manipulated a behavior not covered in one of the categories above



## Adult participants could not be over $X$ years of age <br> Excluded those above age: <br> Upper age restriction

## Form 3: Patient Selection

Is a participant flow diagram presented?
Yes if the article includes a diagram that details the process of patient selection
This usually includes the number of individuals screened, ineligible, enrolled, randomized and followed up
Are multiple chronic conditions included in the participant characteristics?
This may be reported in the Subjects section or in Table 1
Yes if article reported one of the following:
Number of study participants who also had another chronic condition not necessary for inclusion
Mean number of chronic conditions per participant
Charlson Comorbidity index mean and standard deviation
Ex: In a trial where all patients have diabetes, Table 1 lists the percentage of patients with hypertension
Ex: In a trial where all patients have diabetes and hypertension, Table 1 lists the number of patients with depression.
Can the inclusion of individuals with multiple chronic conditions be inferred?
Yes if participant characteristics inferring the presence of multiple chronic conditions were reported Ex: A trial with cancer as a selection criterion lists the number of participants taking antihypertensives. It can be inferred that these individuals have multiple chronic conditions because they have both cancer and hypertension.
Is this description general or condition specific?
Check all that apply
General- study broadly described a group of participants with multiple chronic conditions (ex: \# of participants with comorbid conditions)
Condition Specific- study specifically described group(s) of participants with certain chronic condition(s) (ex: \# of participants with hypertension)
Is the total number of participants with [SELECTED CHRONIC CONDITION] reported?
Yes, if the article reports the number of individuals in the study with this comorbid condition, including those inferred to have this chronic condition
Ex: 20 diabetic patients in this trial had comorbid hypertension or 20 diabetic patients in this trial took hypertensive medications
Which specific conditions were reported or inferred in the participant characteristics? Select all conditions that apply, other than the condition(s) necessary for inclusion in the study
How many additional specific chronic conditions were reported or inferred?
Calculated field. The total number of specific chronic conditions, aside from the target chronic condition(s), that were included or inferred in the participant characteristics.
Are any of the following statistics regarding participants with MCC reported?
Select all that apply
Number - number of enrolled participants with one or more comorbid chronic conditions
Percentage- percentage of enrolled participants (out of study total) with one or more comorbid chronic conditions
Mean- the mean number of chronic conditions per participant Charlson comorbidity index- a specific index for comorbidities, would be reported as a mean and standard deviation in participant characteristics
Not Reported- number or percentage of participants with one or more comorbid chronic conditions is not reported

## Form 4: Quality Assessment

## Random sequence generation (selection bias)

Describe the method used to generate the allocation sequence in sufficient detail to allow an assessment of whether it should produce comparable groups.
Low Risk criteria:
The investigators describe a random component in the sequence generation process such as:
Referring to a random number table;
Using a computer random number generator;
Coin tossing;
Shuffling cards or envelopes;
Throwing dice;
Drawing of lots;
Minimization*
*Minimization may be implemented without a random element, and this is considered to be equivalent to being random.
High Risk criteria:
The investigators describe a non-random component in the sequence generation process. Usually, the description would involve some systematic, non-random approach, for example:

Sequence generated by odd or even date of birth;
Sequence generated by some rule based on date (or day) of admission;
Sequence generated by some rule based on hospital or clinic record number.
Other non-random approaches happen much less frequently than the systematic approaches mentioned above and tend to be obvious. They usually involve judgement or some method of nonrandom categorization of participants, for example:

Allocation by judgement of the clinician;
Allocation by preference of the participant;
Allocation based on the results of a laboratory test or a series of tests;
Allocation by availability of the intervention.
Unclear Risk criteria:
Insufficient information about the sequence generation process to permit judgement of 'Low risk' or 'High risk'.

## Allocation concealment (selection bias)

Describe the method used to conceal the allocation sequence in sufficient detail to determine whether intervention allocations could have been foreseen in advance of, or during, enrollment. Low Risk criteria:
Participants and investigators enrolling participants could not foresee assignment because one of the following, or an equivalent method, was used to conceal allocation:

Central allocation (including telephone, web-based and pharmacy-controlled randomization);
Sequentially numbered drug containers of identical appearance;
Sequentially numbered, opaque, sealed envelopes.

## High Risk criteria:

Participants or investigators enrolling participants could possibly foresee assignments and thus introduce selection bias, such as allocation based on:

Using an open random allocation schedule (e.g. a list of random numbers);
Assignment envelopes were used without appropriate safeguards (e.g. if envelopes were
unsealed or nonopaque or not sequentially numbered);
Alternation or rotation;
Date of birth;
Case record number;
Any other explicitly unconcealed procedure.

## Unclear Risk criteria:

Insufficient information to permit judgement of 'Low risk' or 'High risk'. This is usually the case if the method of concealment is not described or not described in sufficient detail to allow a definite judgement - for example if the use of assignment envelopes is described, but it remains unclear whether envelopes were sequentially numbered, opaque and sealed.

## Blinding of participants and personnel (performance bias)

Describe all measures used, if any, to blind study participants and personnel from knowledge of which intervention a participant received. Provide any information relating to whether the intended blinding was effective.
Low Risk criteria:
Any one of the following:
No blinding or incomplete blinding, but the reader judges that the outcome is not likely to be influenced by lack of blinding;
Blinding of participants and key study personnel ensured, and unlikely that the blinding could have been broken.
High Risk criteria:
Any one of the following:
No blinding or incomplete blinding, and the outcome is likely to be influenced by lack of blinding;
Blinding of key study participants and personnel attempted, but likely that the blinding could have been broken, and the outcome is likely to be influenced by lack of blinding.
Unclear Risk criteria:
Any one of the following:
Insufficient information to permit judgement of 'Low risk' or 'High risk';
The study did not address this outcome.

## Blinding of outcome assessment (detection bias)

Describe all measures used, if any, to blind outcome assessors from knowledge of which intervention a participant received. Provide any information relating to whether the intended blinding was effective.
Low Risk criteria:
Any one of the following:
No blinding of outcome assessment, but the reader judges that the outcome measurement is not
likely to be influenced by lack of blinding;
Blinding of outcome assessment ensured, and unlikely that the blinding could have been
broken.
High Risk criteria:
Any one of the following:
No blinding of outcome assessment, and the outcome measurement is likely to be influenced by
lack of blinding;
Blinding of outcome assessment, but likely that the blinding could have been broken, and the
outcome measurement is likely to be influenced by lack of blinding.
Unclear Risk criteria:
Any one of the following:
Insufficient information to permit judgement of 'Low risk' or 'High risk';
The study did not address this outcome.

## Incomplete outcome data (attrition bias)

Describe the completeness of outcome data for each main outcome, including attrition and exclusions from the analysis. State whether attrition and exclusions were reported, the numbers in each intervention group (compared with total randomized participants), reasons for attrition/exclusions where reported, and any re-inclusions in analyses performed by the review authors.
Low Risk criteria:
[Type here]

Any one of the following:
No missing outcome data;
Missing outcome data is clearly explained
Reasons for missing outcome data unlikely to be related to true outcome (for survival data, censoring unlikely to be introducing bias);
Missing outcome data balanced in numbers across intervention groups, with similar reasons for missing data across groups;
For dichotomous outcome data, the proportion of missing outcomes compared with observed event risk not enough to have a clinically relevant impact on the intervention effect estimate; For continuous outcome data, plausible effect size (difference in means or standardized difference in means) among missing outcomes not enough to have a clinically relevant impact on observed effect size;
Missing data have been imputed using appropriate methods.

## High Risk criteria:

Any one of the following:
Reason for missing outcome data likely to be related to true outcome, with either imbalance in numbers or reasons for missing data across intervention groups;
Clearly missing outcome data with no explanation provided
For dichotomous outcome data, the proportion of missing outcomes compared with observed event risk enough to induce clinically relevant bias in intervention effect estimate;
For continuous outcome data, plausible effect size (difference in means or standardized difference in means) among missing outcomes enough to induce clinically relevant bias in observed effect size;
'As-treated' analysis done with substantial departure of the intervention received from that assigned at randomization;
Potentially inappropriate application of simple imputation.
Unclear Risk criteria:
Any one of the following:
Insufficient reporting of attrition/exclusions to permit judgement of 'Low risk' or 'High risk' (e.g. number randomized not stated, no reasons for missing data provided);
Can not determine whether data is missing
The study did not address this outcome.

## Selective outcome reporting (reporting bias)

State how the possibility of selective outcome reporting was examined by the review authors, and what was found.
Low Risk criteria:
Any of the following:
The study protocol is available and all of the study's pre-specified (primary and secondary) outcomes that are of interest in the review have been reported in the pre-specified way; The study protocol is not available but it is clear that the published reports include all expected outcomes, including those that were pre-specified (convincing text of this nature may be uncommon).
High Risk criteria:
Any one of the following:
Not all of the study's pre-specified primary outcomes have been reported;
One or more primary outcomes is reported using measurements, analysis methods or subsets of the data (e.g. subscales) that were not pre-specified;
One or more reported primary outcomes were not pre-specified (unless clear justification for their reporting is provided, such as an unexpected adverse effect);
One or more outcomes of interest in the review are reported incompletely so that they cannot be entered in a meta-analysis;
[Type here]

The study report fails to include results for a key outcome that would be expected to have been reported for such a study.
Unclear Risk criteria:
Insufficient information to permit judgement of 'Low risk' or 'High risk'. It is likely that the majority of studies will fall into this category.
Quality Score
Calculated risk of bias score from the sum of scores for each the 6 domains of bias.
Low Risk =-1; High Risk = 1; Unclear Risk = 0
Lower values indicate a lower risk of bias, while higher values indicate a higher risk of bias.
Source for quality assessment variables (excluding quality score) : Cochrane Risk of Bias Tool, Higgins J. Green S. Cochrane handbook for systematic reviews of interventions version 5.1. 0. 2011.

## Form 5: Outcomes

Is comorbidity information considered in analysis?
Primary outcomes were compared between individuals with and without comorbidities

