Effectiveness of interventions to improve the public’s antimicrobial resistance awareness and behaviours associated with prudent use of antimicrobials: a systematic review

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Price, Lesley; Gozdzielewska, Lucyna; Young, Mairi; Smith, Fraser; MacDonald, Jennifer; McParland, Joanna; Williams, Lynn; Langridge, Darren; Davis, Mark and Flowers, Paul (2018). Effectiveness of interventions to improve the public’s antimicrobial resistance awareness and behaviours associated with prudent use of antimicrobials: a systematic review. Journal of Antimicrobial Chemotherapy, 73(6) pp. 1464–1478.

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Version: Supplementary Material

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**Supplementary Table S1. An example of search strategy applied for MEDLINE database.**

**MEDLINE**

### Context

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>1</td>
<td>(superbug* OR superinfection*):ti,ab</td>
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<tr>
<td>2</td>
<td>MH “Superinfection”</td>
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<tr>
<td>3</td>
<td>(multiresistant OR multiresistance OR &quot;multi-resistant&quot; OR &quot;multi-resistance&quot; OR MDR OR MDRO OR AMR):ti,ab</td>
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<td>((drug* OR multidrug OR “multi-drug” OR antimicrobial* OR “anti-microbial*” OR antiinfection* OR “anti-infection*” OR antibacterial* OR “anti-bacterial*” OR antibiotic* OR “anti-biotic*”) N4 (resistant OR resistance OR tolerant OR tolerance)):ti,ab</td>
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<tr>
<td>5</td>
<td>MH &quot;Drug Resistance&quot;</td>
</tr>
<tr>
<td>6</td>
<td>MH &quot;Drug Resistance, Microbial+&quot;</td>
</tr>
<tr>
<td>7</td>
<td>MH &quot;Drug Resistance, Multiple+&quot;</td>
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<tr>
<td>8</td>
<td>MH &quot;Drug Tolerance&quot;</td>
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<tr>
<td>9</td>
<td>(“r factor*” OR “resistant factor*”):ti,ab</td>
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<td>11</td>
<td>((antimicrobial OR “anti-microbial” OR antiinfection OR “anti-infection” OR antibacterial OR “anti-bacterial” OR antibiotic OR “anti-biotic”) N4 (stewardship)):ti,ab</td>
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<td>12</td>
<td>MH &quot;Anti-Infective Agents&quot;</td>
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<tr>
<td>13</td>
<td>MH &quot;Anti-Bacterial Agents&quot;</td>
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<td>14</td>
<td>OR/1-13</td>
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### Population

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<td>(public OR population OR community OR citizen* OR household* OR resident* OR consumer* OR carer* OR caregiver* OR people OR adult* OR men OR women OR mother* OR father* OR parent* OR student* OR pupil* OR children OR adolescent* OR teenager*):ti,ab</td>
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<td>16</td>
<td>MH “Caregivers”</td>
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<tr>
<td>17</td>
<td>MH “Men”</td>
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<tr>
<td>18</td>
<td>MH “Women”</td>
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</table>
MH “Parents”
MH “Fathers”
MH “Mothers”
MH “Students”
OR/17-22

**Intervention**

(intervention*):ti,ab

(training OR teaching OR education OR program* OR initiative* OR workshop* OR seminar* OR module* OR session* OR curriculum):ti,ab

MH “Teaching”
MH “Teaching Materials”
MH “Education”
MH “Models, Educational”
MH “Health Education”
MH “Education, Nonprofessional”
MH “Curriculum”

((written OR printed OR online OR oral OR disseminat* OR provi*) N2 (information OR advice OR resource* OR material*)):ti,ab

(pamphlet* OR handout* OR poster* OR leaflet* OR newsletter* OR brochure* OR booklet* OR TV OR television OR radio OR marketing OR advertising OR publicity OR campaign* OR “mass media” OR “communication media” OR outreach OR computer* OR Internet OR online OR website* OR “social media” OR “social network*” OR Facebook OR Twitter OR tweet OR blog* OR SMS OR “short messaging service*” OR text* OR email* OR podcast* OR smartphone* OR ((mobile OR cell OR smart) N1 (phone* OR telephone* OR app* OR application*)))):ti,ab

MH “Consumer Health Information”
MH “Health Promotion”
MH “Health Communication”
MH “Persuasive Communication”
MH “Public Health”
MH “Audio Visual Aids”
Outcomes

MH “Program Evaluation”

((behavior N3 (change* OR changing OR alter* OR modification* OR modify OR modifying OR modifies OR modified)) OR intention*):ti,ab

MH “Motivation”

MH "Intention"

(attend* OR belief* OR view* OR opinion* OR expectation* OR "anticipat* regret" OR knowledge OR awareness OR "health literacy" OR "risk perception*" OR "perceived risk*" OR "perceived susceptibility" OR "illness perception*" OR "treatment perception*")):ti,ab

MH “Attitude to Health”

MH “Health Knowledge, Attitudes, Practice”

MH “Health Literacy”

("perceived behavioral control" OR autonomy OR capacity OR "self-efficacy" OR competen* OR confidence OR ability OR skill*):ti,ab

MH "Self Efficacy"

("perceived norm*" OR "injunctive norm*" OR "subjective norm*" OR "descriptive norm*" OR "moral norm*" OR "self-identity"):ti,ab

MH "Social Norms"

((medication* OR drug* OR antimicrobial* OR "anti-microbial*" OR anti-infection* OR "anti-infection*" OR antibacterial* OR "anti-bacterial*" OR antibiotic* OR "anti-biotic*")):N4 (use OR used OR usage OR consumption OR purchasing OR dispos* OR storage OR storing OR sharing OR shared OR expect* OR request*)):ti,ab
((inappropriat* OR irrational OR imprudent OR unnecessar* OR irresponsibl* OR misuse* OR improper* OR mistake* OR indiscriminat* OR suboptimum* OR bad OR overuse* OR excessiv* OR vary OR varied OR variation OR poor OR unsafe*) N4 (use OR usage OR utili?e OR treatment OR consumption OR purchas* OR dispos* OR storage OR sharing OR shared OR expectation* OR request*)):ti,ab

((appropriat* OR rational OR prudent OR judicious* OR optimal* OR correct OR proper* OR responsibl* OR safe* OR good OR decreas* OR limit* OR curb* OR minimi?e* OR minimal* OR lessen* OR curtail* OR abate* OR restrict* OR lower* OR discontinue* OR delay*) N4 (use OR usage OR utili?e OR treatment OR consumption OR purchas* OR dispos OR storage OR sharing OR shared OR expectation* OR request*)):ti,ab

MH “Drug-Seeking Behavior”

(compliance OR concordance OR adherence):ti,ab

MH “Medication Adherence”

(“self-car*” OR "self-manag*" OR "self-monitor*” OR "self-medicat*”):ti,ab

MH "Self Care"

MH "Self Medication"

OR/50-70

**Combination of all search strings**

AND/14,23,49,71

Limit 72 to year 2000
### Supplementary Table S2. Data extraction tool designed for the purpose of the study.

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<th>Language</th>
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<th>Study design</th>
<th>Population</th>
<th>Inclusion criteria</th>
<th>Exclusion criteria</th>
<th>Sample size (including power calculation &amp; statistical analysis)</th>
<th>Recruitment methods</th>
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<td>FINDINGS/RESULTS</td>
<td>COMMENTS/NOTES</td>
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<td>Findings/results (secondary outcomes)</td>
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<td>Conclusions</td>
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</table>
**Supplementary Table S3. Excluded studies with rationale.**

**Design other than RCT, NRT, CBA or NCBA study**


15. McCarthy M. Many US parents have poor understanding of proper antibiotic use, study finds. *BMJ (Online)* 2015; 351: h4009.


**Participants recruited from HC settings**


**Context other than AMR**


Outcomes not related to AMR awareness antimicrobial stewardship


Full text not available


Other

Conference abstract of already reviewed study

*Full text not available in English/inability to translate*


*Article that refers to already reviewed study*


*Protocol of already reviewed study*


*Majority (74.3%) of respondents were HC professionals*