



Web-based intervention modelling experiments: a way of exploring professional behaviour change interventions before a full-scale trial

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HSRU is funded by the Chief Scientist Office of the Scottish Government Health and Social Care Directorates. The author accepts full responsibility for this talk.

What is an IME?

- **An IME asks a user a series of questions about a particular behaviour based on a theoretical framework.**
- **Scenarios are then presented to the user who has to make a decision.**
- **The decisions are linked to users' answers to the questions to identify predictors of behaviour.**
- **An intervention is designed that explicitly addresses predictors of behaviour.**
- **The intervention is tested in an RCT using more scenarios.**

The WIME project*

- **Aimed to replicate a paper-based IME from 2008 with web-based delivery.**
- **Recruited GPs (family doctors) in Scotland for a two-part study:**
 - ➔ **250 GPs in Part 1 (develop a new intervention)**
 - ➔ **150 GPs in Part 2 (test new intervention)**

***The protocol is available in Implementation Science 2011, 6: 16.**

WIME: getting predictors of behaviour

My Intervention :: Section1Page4

8. Given 10 patients presenting for the first time with an URTI, how many patients would you intend to manage without prescribing an antibiotic?

Intention (part of)

0 1 2 3 4 5 6 7 8 9 10

9. I find it difficult to manage patients presenting with an URTI without prescribing an antibiotic who:

Subjective norms (part of)

	Strongly disagree	1	2	3	4	5	6	7	Strongly agree
a) Have already tried to self medicate for an URTI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Expect me to prescribe an antibiotic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Have a past history of an Chronic Obstructive Airways Disease	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Generally I find it difficult:

	Strongly disagree	1	2	3	4	5	6	7	Strongly agree
a) To manage patients with URTIs without prescribing an antibiotic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) To end a consultation for a patient with an URTI who I have managed without prescribing an antibiotic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) To manage a patient whose URTI symptoms are distressing to them without prescribing an antibiotic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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WIME: a clinical scenario

My Intervention :: PrescriptionExample

Worked Example

No. 000. Master Adam Simpson, 23 George Street, Othertown Age 8 years

Active Problems	: Nil	Current medication	: Nil	Smoker	: Not recorded
Significant past	: Nil	1. Refer to presenting complaint	Occupation	: Not recorded	

HISTORY : 3 days cough, sore throat++, fever.
EXAMINATION: Red pharynx, tonsils enlarged, tonsillar nodes ++, ears NAD

2. Type your diagnosis here 3. Type your management decision here

DIAGNOSIS: "Tonsillitis" MANAGEMENT: "Advised bed rest & plenty fluids"

4. If you decide to prescribe drugs please write this on the script as below

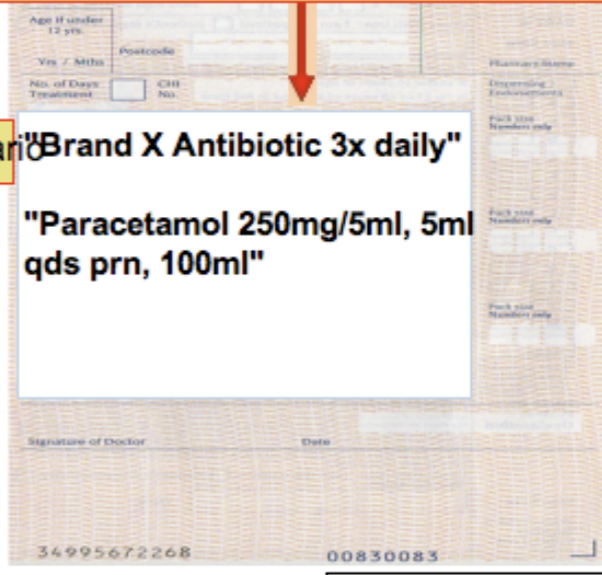
5. Finally, please indicate below how difficult it was for you to make your decision about this scenario

On the scale 1 to 10, how difficult was it for you to make a decision for this scenario?

Not at all difficult 1 2 3 4 5 6 7 8 9 10 Extremely difficult

If you wish to comment on this decision please do so here

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Part 1 (270 GPs): predictors of prescribing

Construct	Correlation: intention	Correlation: behaviour	Agrees with paper IME?
Attitude (direct)	0.48	0.25	Yes: both
Attitude (indirect)	0.31	0.12 (P=0.052)	Yes: intention
Subjective norm	0.09 (P=0.14)	-0.06 (P=0.35)	Yes: both
Perceived behavioural control (direct)	0.25	0.05 (P=0.37)	Yes: intention
..			
Self-efficacy	0.37	0.22	Yes: both
..			
Anticipated consequences	0.39	0.24	Yes: both

P<0.005 unless stated otherwise

Part 1: predictors of prescribing

- **The web-based IME identified 8 out of 10 of the predictors identified in the 2008 paper-based IME.**
- **For the remaining two constructs, attitude (indirect) and perceived behavioral control (direct), disagreement was not complete: they did agree for intention (but not behaviour).**

Part 1: so, what next?

- **We put the predictive constructs into theoretical construct domains.**
- **We then mapped the construct domains onto behaviour change techniques known to affect the domains.**
- **We used the Theoretical Domains Framework¹ to do this.**

1. From theory to intervention: mapping theoretically derived behavioural determinants to behaviour change techniques. Special Issue on "Conceptualizing Theory-Based Health Behavior Change Research" of Applied Psychology: An International Review 2008, 57, 660-680

Part 1: two difficult situations for GPs

Two situations (behavioural cues) were associated with the most variation in decisions to prescribe an antibiotic:

- A patient specifically asks for an antibiotic, or clearly expects to be prescribed an antibiotic**
- A patient (or the patient's parents if the patient is a child) is very distressed about his or her symptoms.**

Part 1: the new intervention - Action Plan

Situation	Example of action plans to avoid prescribing an antibiotic in these situations		
1. A patient with an URTI specifically asks for an antibiotic, or clearly expects to be prescribed an antibiotic	<i>If a patient asks for an antibiotic, then I will provide them with a clear reason for not prescribing which emphasises my professional expertise e.g. <i>Your URTI is likely to be caused by a virus and an antibiotic won't help. You are more likely to have side-effects than benefits if I prescribe an antibiotic.</i></i>		
2. A patient with an URTI (or the patient's parents) are very distressed about their symptoms	<i>if a patient (or parent) is distressed about their symptoms, then I will</i> a) reassure them by stressing that they will recover b) tell them that an antibiotic will not help them and c) I will give them something to do so they can feel more in control and relieve symptoms (e.g. <i>drink hot water with lemon and honey as necessary through the day</i>)		
How is progress/success of the action plan to be monitored? I will count the number of times I succeed in managing an URTI without prescribing an antibiotic	When will this happen? Daily for one week	Who in the practice will monitor plan progress? I will	

Part 2: testing the new intervention

- **Do a trial.**
- **GPs were randomised to receive one of three things before answering some questions and looking at 8 new clinical scenarios.**

Part 2: what did we find?

Unadjusted for baseline behavioural simulation scores.

Intervention	Estimate	95% CI lower	95% CI upper	P – value
Action plan	0.83	0.25	1.42	0.005
P communication	0.78	0.17	1.40	0.013

Adjusted for baseline behavioural simulation scores.

Intervention	Estimate	95% CI lower	95% CI upper	P – value
Action plan	0.82	0.26	1.37	0.004
P communication	0.73	0.14	1.31	0.015
Baseline score	0.56	0.28	0.85	<0.001

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About 0.8 fewer scenarios with a prescription.

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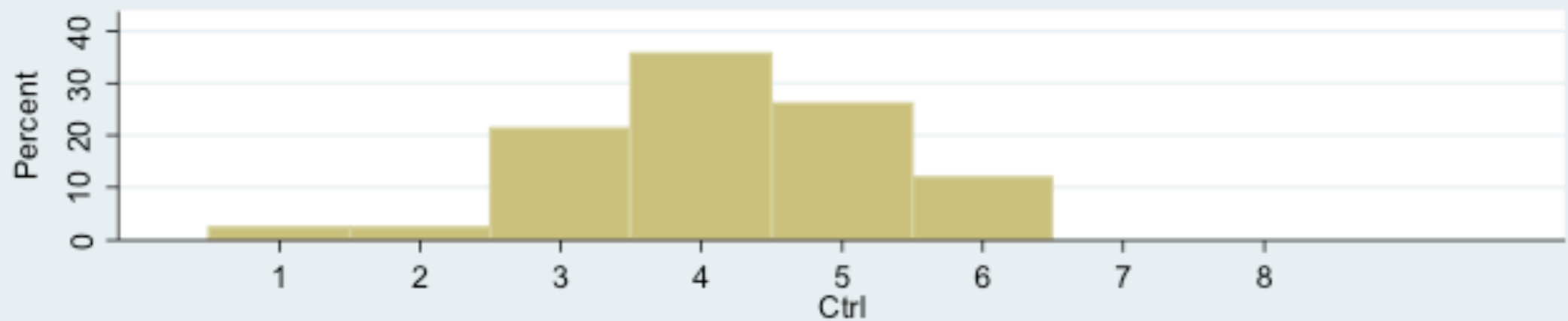
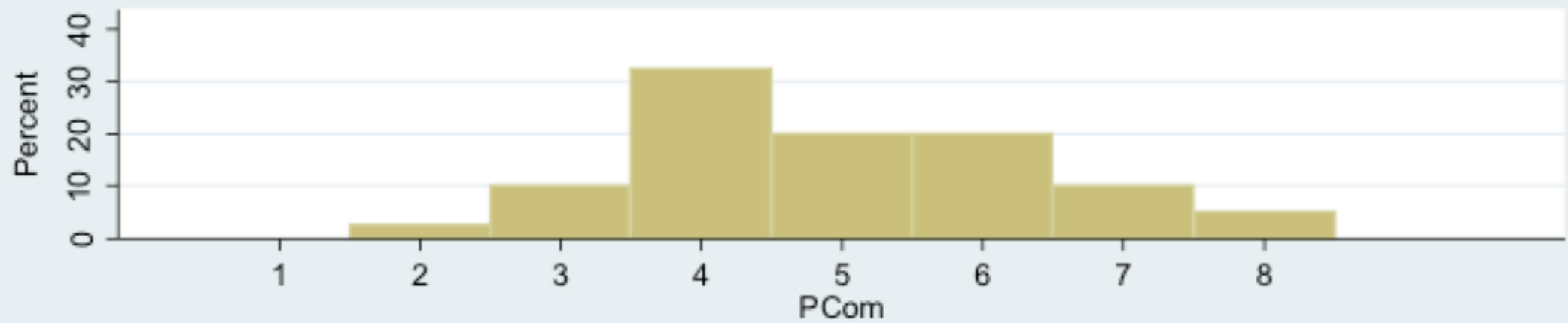
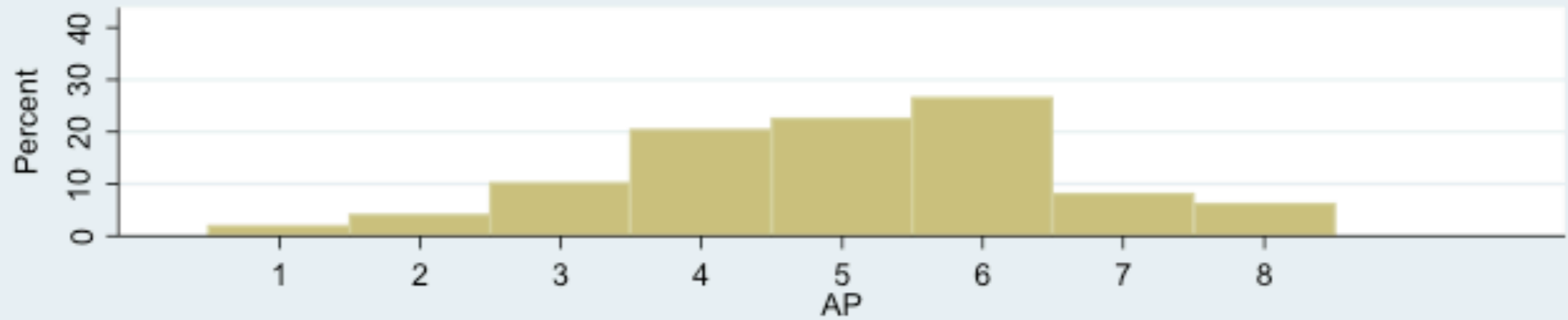
Adjusting for baseline didn't make much difference.

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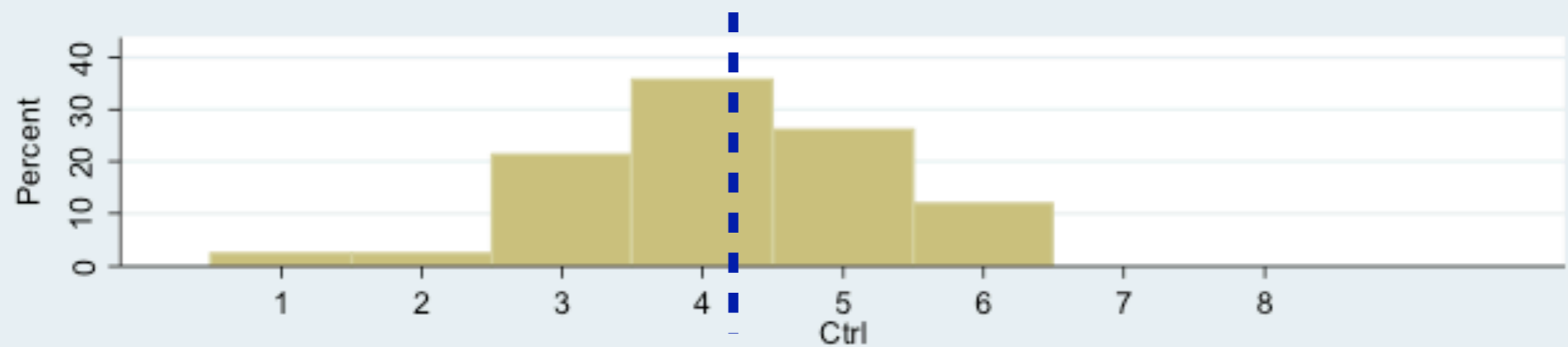
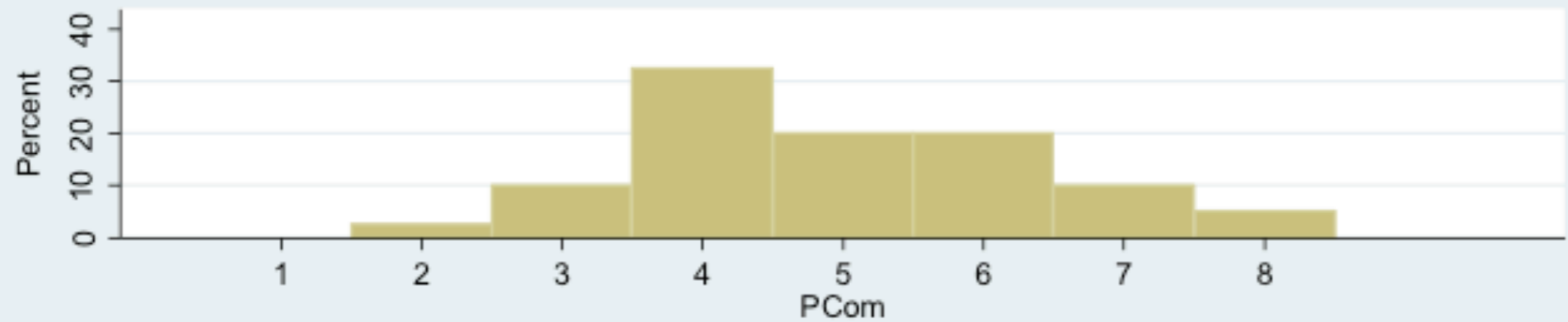
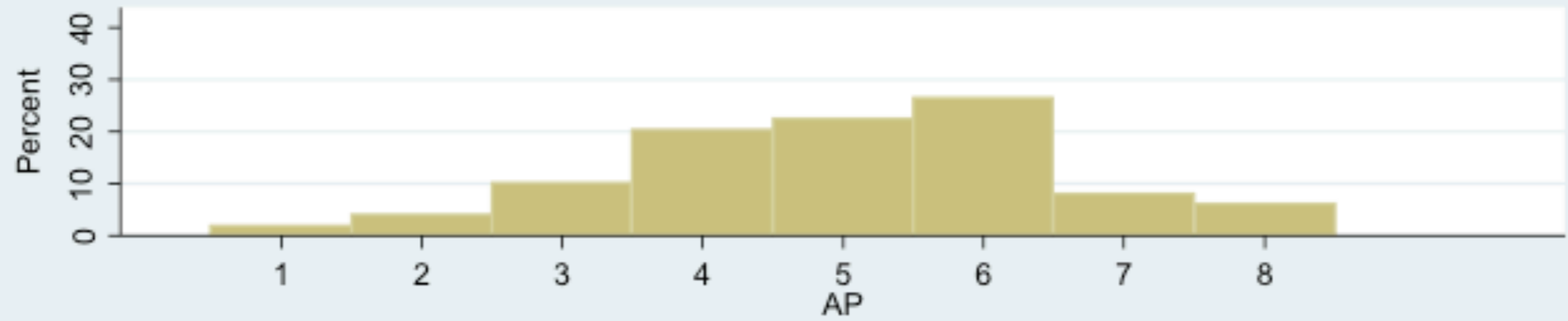
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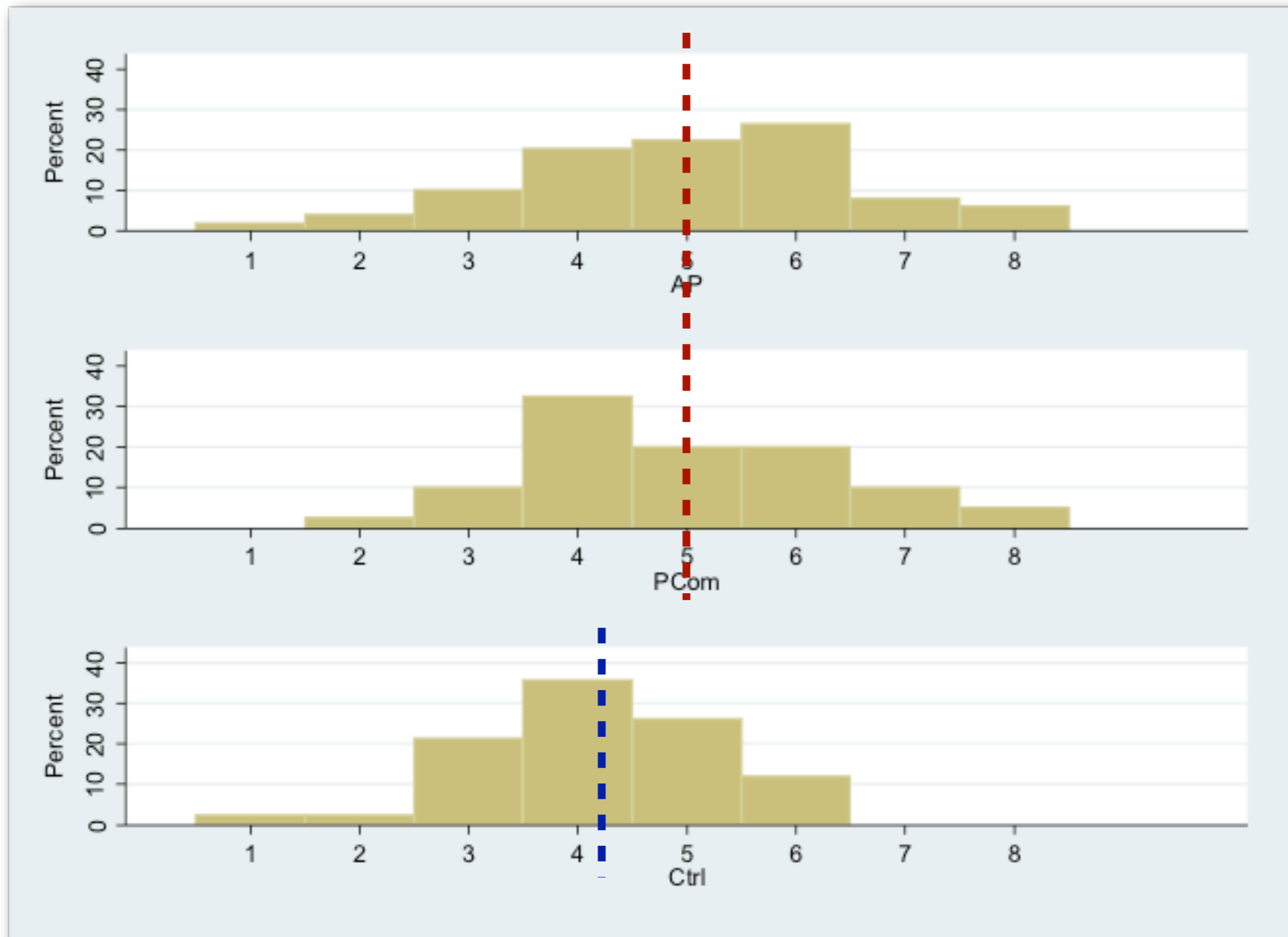
Score out of 8 for no antibiotics



Score out of 8 for no antibiotics



Score out of 8 for no antibiotics



Conclusions

- **There were high levels of agreement between the WIME and the earlier paper-based IME.**
- **This gives us confidence that the IME methodology is robust.**
- **Web-based delivery of IMEs opens up a greater range of possibilities for intervention components that can be tested before a full-scale trial.**

Thank you!

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