

The economics and value of prevention



A plan to improve impact of prevention

Fabrizio Faggiano, Roberta Molinar

UPO - University of Piemonte Orientale – Novara (I)



UNIVERSITÀ DEL PIEMONTE ORIENTALE



Objective

- To present the evolution of the idea of a



Intro - The paradox of prevention

- 4 health behaviours (smoking, alcohol, physical exercise and diet) account for 38% of DALYs in Western Europe
- In the US annual costs of tobacco for medical expenses and lost productivity is 157 Billion \$ (Woolf, JAMA, 2008)
- But the expenditure for prevention activities is no more than 3% of the health expenditure (OECD, 2010)!

The paradox of prevention

- “resistance to health promotion and disease prevention has multiple causes, including skepticism about effectiveness....”
- But what effectiveness does mean?

Impact of prevention

Impact at the level of population depends on

- *Effectiveness* of the intervention
- Coverage
- Adherence of standard of practice

$$\text{IMPACT} = \text{EFF} * \text{IMPLE}$$

Impact of prevention

For example:

- Tobacco smoking at 16 ys (Prevalence=30%)
- RRR of programme X=-30%
- Program implementation=100%

$$\text{IMPACT} = 30\% * 0.30 = -9.0\%$$

- Program implementation=20%

$$\text{IMPACT} = 30\% * 0.30 * 0.20 = -1.8\%$$

Focus on effectiveness

- We know that not all prevention interventions are effective
- From a 2012 overview of Cochrane reviews on prevention:

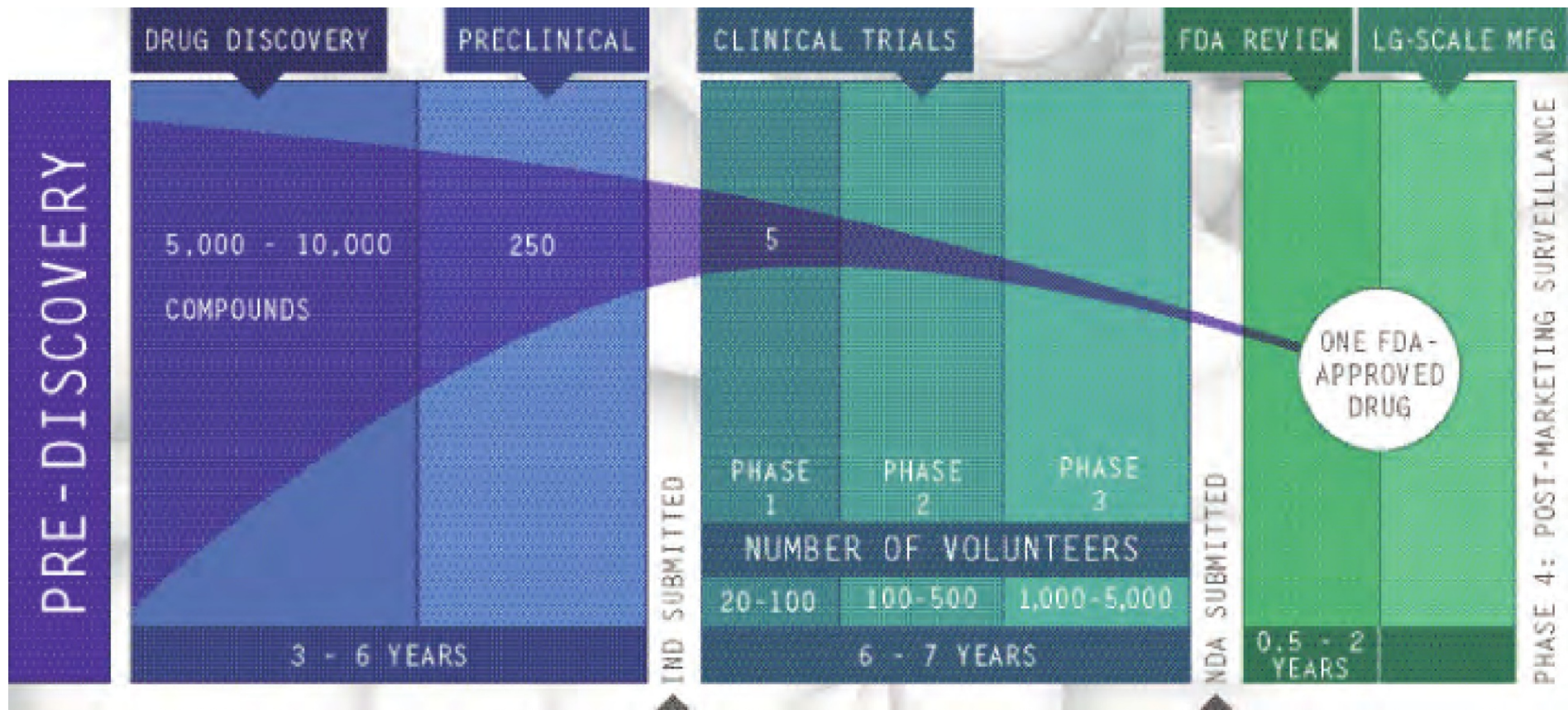
Focus on effectiveness

Issue	Int. Arms		Fav. Int.		Fav. Ctrl		NS Int.		
	N.°	(%) col	N.°	(%) row	N.°	(%) row	N.°	(%) row	
ALC	124	24,65	48	38,71	4	2,56	72	58,06	
CVD	7	1,39	2	28,57			5	71,43	
HP	0	0	0				0	0	
IDU	90	17,89	2	2,22		5,56	53	58,89	
MH	62	12,32			0	0	43	69,35	
OBE	30	5,96		26,67	0	0	22	73,33	
PRE	35	6,96	5	14,29	0	0	30	85,71	
TOB	155	30,82	57	36,77	7	4,52	91	58,71	
Tot	503	100,00	171	34,00	16	3,18	316	62,82	100,00

Not surprising!

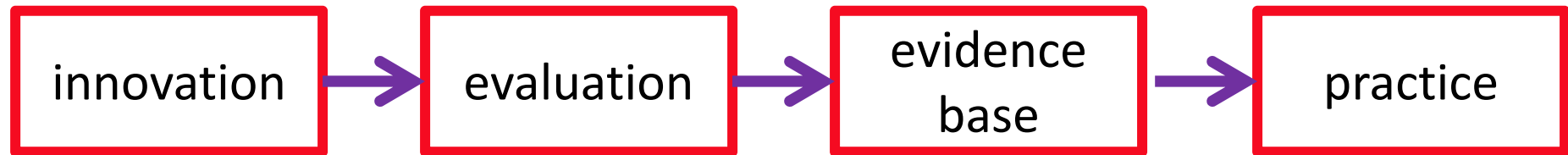
Int.: Intervention; **Fav.:** Favouring; **Ctrl:** Control; **NS:** Not significant; **MH:** Mental health; **HP:** Health Promotion; **TOB:** Tobacco; **CVD:** Cardiovascular Disease; **IDU:** Illicit Drugs Use; **ALC:** Alcohol; **PRE:** Pregnancy; **OBE:** Obesity

FDA/EMA Registration process

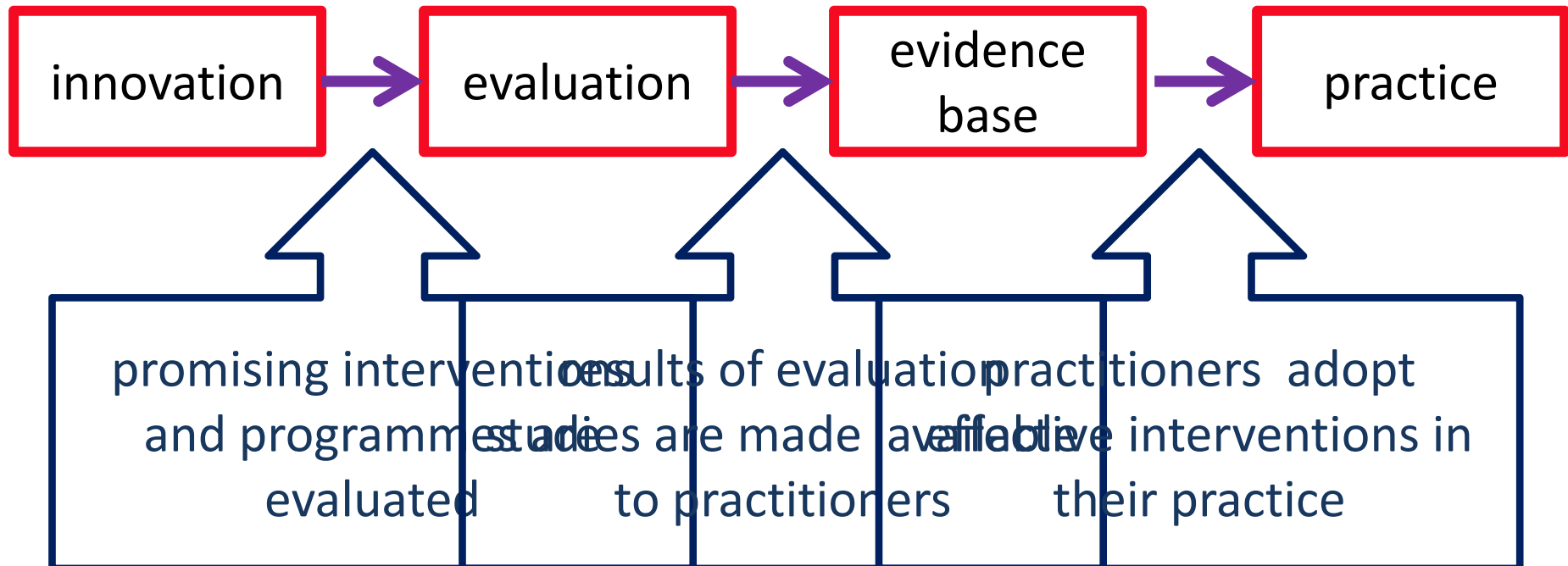


Pharmaceutical Research and Manufacturers of America. Drug Discovery and Development: understanding the R&D process [Internet]. 2007 [cited 2011 Jul 21]. Available from: http://www.phrma.org/sites/default/files/159/rd_brochure_022307.pdf

Process of evidence transfer in prevention



Process of evidence transfer in prevention



Access to evidence base

How evaluations are made available to practitioners?

How practitioners access to evidence base?

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Guidelines and Guidance

Intervention Synthesis: A Missing Link between a Systematic Review and Practical Treatment(s)



Paul P. Glasziou^{1*}, Iain Chalmers², Sally Green³, Susan Michie⁴

¹ Centre for Research in Evidence-Based Practice, Faculty of Health Sciences and Medicine, Bond University, Gold Coast, Queensland, Australia, ² James Lind Initiative, Oxford, United Kingdom, ³ Australasian Cochrane Centre, Monash University, Melbourne, Victoria, Australia, ⁴ Centre for Outcomes Research and Effectiveness, Department of Clinical, Educational and Health Psychology, University College London, London, United Kingdom

Access to evidence base

«Current methods to guide the translation of evidence in systematic reviews to the selection ... of a specific intervention within a class of interventions are poorly developed...»

The authors suggest three basic approaches:

- 1) Select the intervention used in a RCT
- 2) Combine components of several trials
- 3) Create a new intervention guided by a (*successful*) model

Access to evidence base

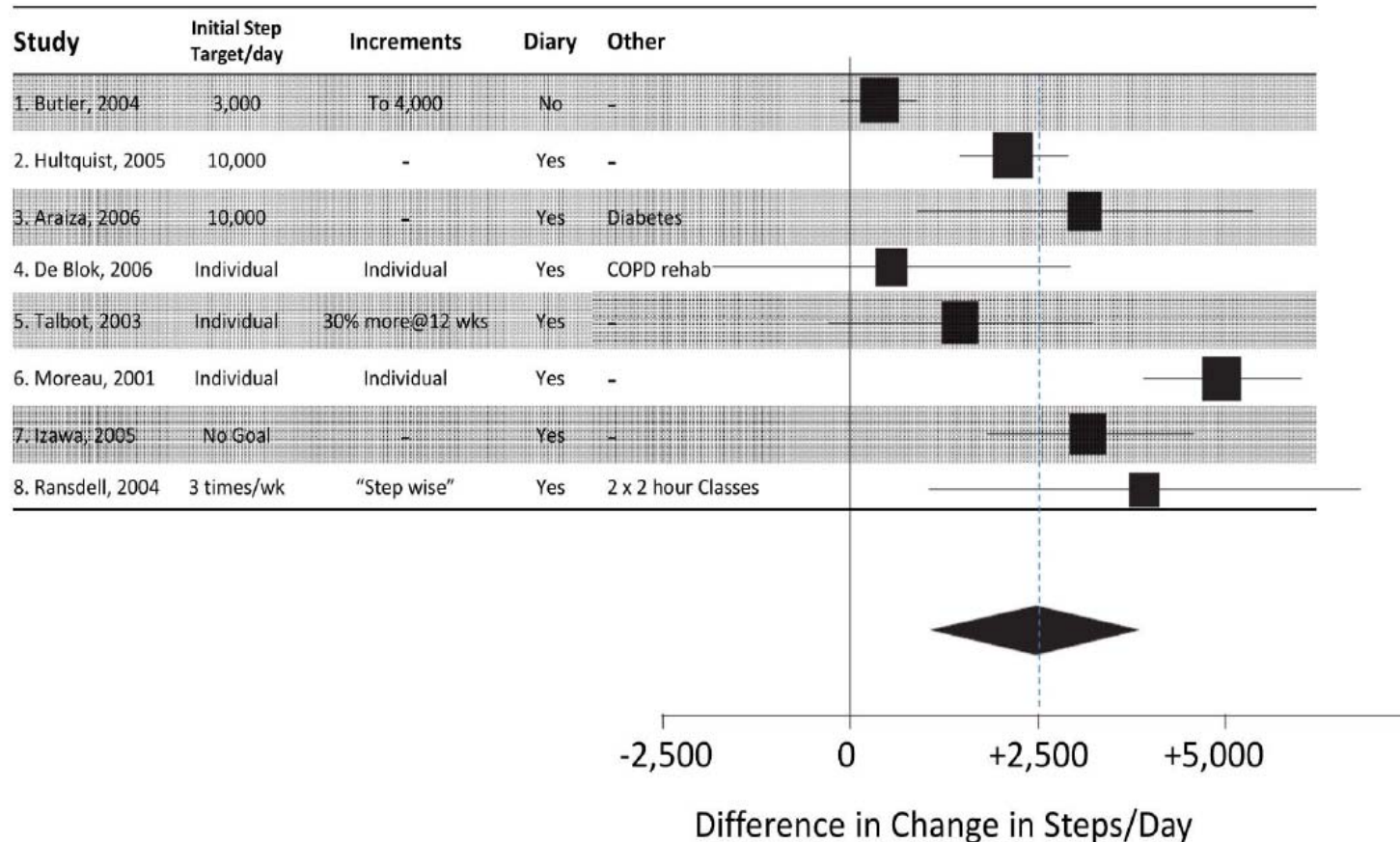


Figure 1. Trials of pedometer interventions to increase physical activity [18]: table of intervention elements of studies with forest plot of effect.

Access to evidence base

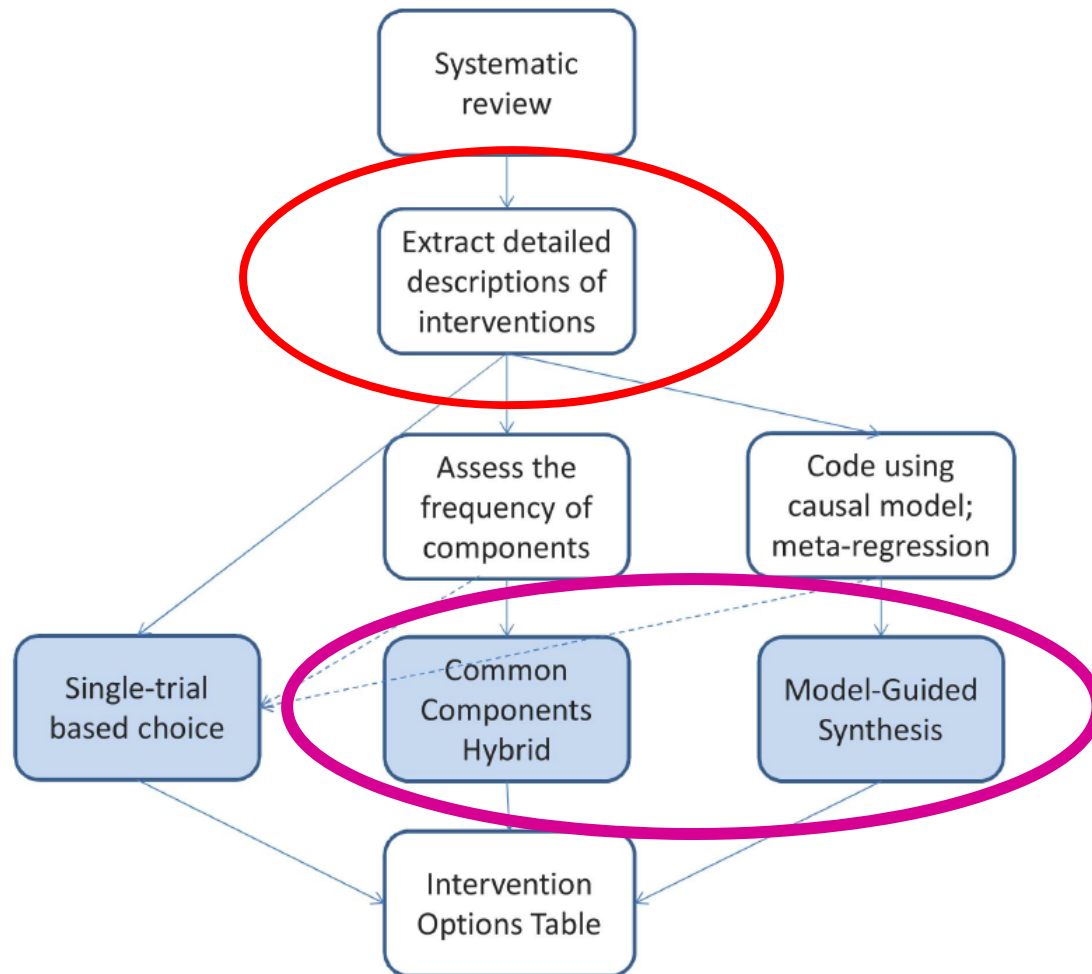


Figure 3. The steps from systematic review to a specific version of an intervention, showing the three
doi:10.1371/journal.pmed.1001690.g003

Details available in the evidence base

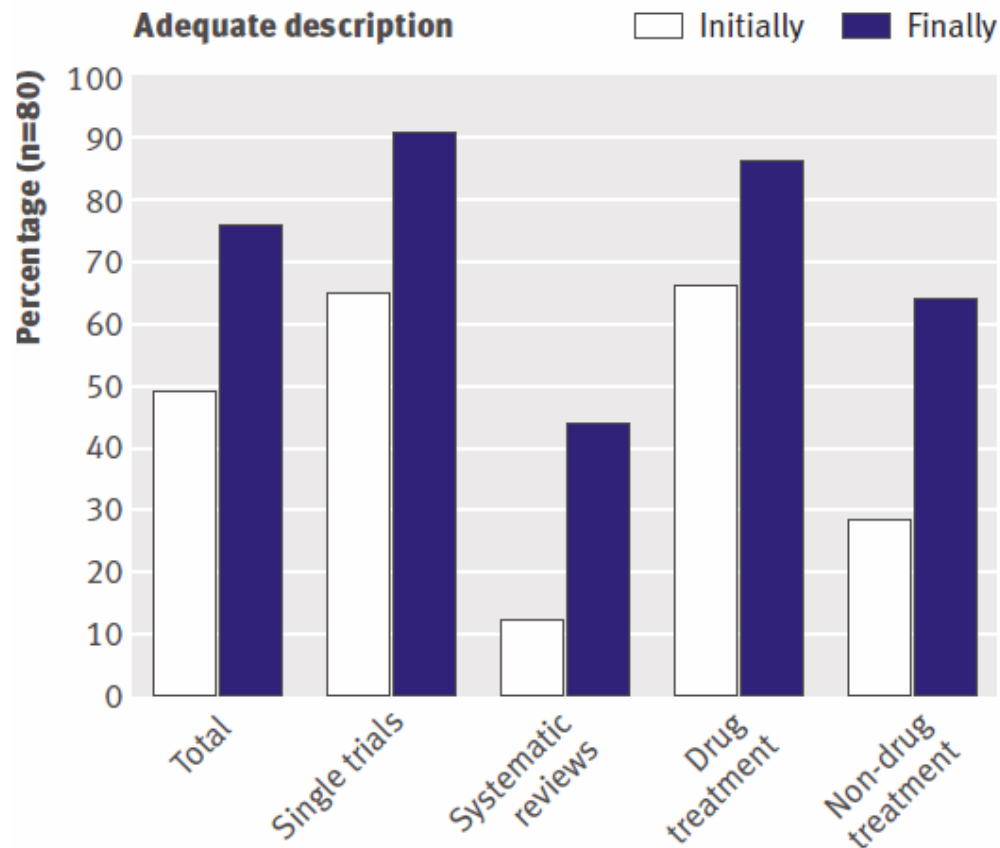


Fig 2 | Percentage of studies with sufficient description of treatment initially (based only on the published paper) and after supplementary information was obtained

Non pharmacological interventions

Reasons given for study intervention materials being unavailable

Category of reason (number of authors providing a response in this category) and illustrative quotes from authors:

Materials not publicly available (9)

- "Due to legal copyright restrictions at my university I am unable to send"
- "Not publicly available because we based them on materials provided by our local government"
- "Not publicly available—only to our trainers"
- "Not yet—they will be made publicly available within two years"
- "No it is not. Attached is a table of contents"
- "The training materials from the trial are not online—we had no real reason to do that"

Corresponding author did not have copy of materials to send or could not provide further details about intervention (8)

- "People originally in the position have moved on"
- "I am unable to find . . . my old computer files"
- "I'm afraid I no longer have access to those materials"
- "I do not have it"
- "I am not able to answer most of your questions. I was not involved with running the trial, only analysing and reporting on the QOL results after the data was collected"
- "I can't provide these"

Other (3)

- "You will have to read the literature"
- "No, is in Dutch"
- "The [materials] are tailored, thus it is difficult to disseminate. We could send an example"

Materials were previously publicly available but no longer are (2)

- "URL doesn't exist anymore"
- "We had been making it previously available, but need to update it, so are no longer"

Focus on dissemination

- No reports on national dissemination of prevention interventions found in Medline and Google search
- Some report from US limited to school based prevention of drug use
 - 1) 1392 districts with high schools surveyed in 2005: 56.5% reported some kind of programmes
 - 2) 1563 districts with elementary schools surveyed in 2008: 35% reported any E-B intervention

Ringwalt, J Prim Prev, 2008

Hanley, J Drug Educ, 2010

High schools in USA

Universal, Evidence-based Substance Use Prevention Curricula Used by School Districts in at Least One School with High School Grades (unweighted N=1301).

Curriculum	Used with <i>any</i> students in high school grades Weighted % (95% CI)	Used <i>the most</i> with students in high school grades Weighted % (95% CI)
Athletes Training and Learning to Avoid Steroids (ATLAS) ^a	1.2 (0.6, 1.8)	0.1 (0.0, 0.3)
keepin' it REAL ^a	0.9 (0.0, 1.8)	0.1 (0.0, 0.3)
Positive Action ^a	1.5 (0.8, 2.3)	0.5 (0.1, 0.8)
Project Toward No Drug Abuse (TND) ^{a, b}	2.2 (1.4, 3.0)	1.0 (0.5, 1.5)
Project Toward No Tobacco Use (TNT) ^a	4.7 (3.3, 6.0)	1.3 (0.4, 2.1)
Too Good for Drugs (TGFD) ^a	4.0 (2.6, 5.3)	2.8 (1.6, 4.0)
<i>Any</i> evidence-based universal curriculum	10.3 (8.3, 12.3)	5.7 (4.1, 7.3)

Elementary schools US

Proportion of school districts using evidence-based substance use prevention curricula targeting elementary school students

Curriculum	Used with students in elementary school grades (n=1472)	Used most frequently with students in elementary school grades (n=1463)
	% (95% CI)	% (95% CI)
Caring School Community Program (formerly Child Development Project) ^a	2.2 (1.3, 3.1)	0.5 (0.1, 0.8)
keepin' it REAL ^a	1.8 (0.9, 2.7)	0.1 (0.0, 0.2)
Life Skills Training ^{a,b,c}	24.2 (21.2, 27.2)	6.5 (4.9, 8.1)
Positive Action ^a	4.8 (3.4, 6.2)	1.1 (0.4, 1.7)
Project TNT ^{a,c}	7.2 (5.6, 8.9)	1.4 (0.6, 2.3)
Protecting You/Protecting Me ^a	3.2 (1.7, 4.6)	0.3 (0.1, 0.6)
Seattle Social Development Project (SOAR) ^{a,b}	1.9 (1.1, 2.6)	0.1 (0.0, 0.2)
Social Competence Promotion Program for Young Adolescents (SCPP-YA) ^a	0.2 (0.0, 0.4)	*d
Too Good for Drugs ^a	7.9 (6.3, 9.6)	4.0 (2.9, 5.1)
Any evidence-based curriculum	35.3 (32.0, 38.6)	14.1 (11.8, 16.3)

Controls of ASAP study

- 83 school districts with 83 high schools and 132 middle
- Surveyed in the context of the evaluation of TCYL, in 2004 (?)

Elementary schools US

Table 2 Number of “named programs” control and treatment schools reported by principals and prevention coordinators by grade

Program ^a	Number of schools by grade									
	7th		8th		9th		10th		11th	
	Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment
D.A.R.E.	10	0	1	0	0	0	1	0	0	0
Here's Looking at You 2000	4	0	4	0	1	0	0	0	0	0
Project Alert ^b	6	0	3	1	0	0	0	0	0	0
Life Skills Training ^b	1	0	1	0	1	1	0	1	0	1
Teens Against Tobacco Use	1	0	2	1	0	0	0	0	1	0
Towards No Tobacco Use	1	0	2	0	0	0	0	0	0	0
Too Good for Drugs ^b	1	0	2	0	1	0	1	0	1	0
AWARE	1	0	1	0	0	0	0	0	0	0
Project Elevate	1	0	1	0	0	0	0	0	0	0
Say No to Drugs	1	0	1	0	1	0	0	0	0	0
DAVE	0	0	1	0	0	0	0	0	1	0
STAR	0	0	0	0	0	0	1	0	1	0
GREAT ^c	0	1	0	2	0	0	0	0	0	0
Know Your Body ^d	0	0	0	0	0	2	0	2	0	0
State Substance Abuse Prevention Curriculum	0	0	0	0	0	0	0	1	0	0
TUPE Grant ^e	0	0	0	0	0	0	0	0	0	1

Number of schools: Middle schools (7th and 8th grades): treatment=59; control=63; high Schools (9th, 10th and 11th grades): treatment=42; control=40

Focus on dissemination

- Although US has several repositories of E-B prevention interventions (e.g. NREPP),
- the frequency of use of effective programmes, at least in the school, appears to be low
- No data from EU, except of a report from Italy in 2009

An report from Italy

- A survey of prevention interventions carried out during 2008 showed
 - 1501 different interventions carried out against the 4 risk factors of ***Gaining Health*** (Tobacco, alcohol, diet and physical activity)
 - Around 14 were evaluated by observational studies,
 - 1 was evaluated by a RCT
 - 1486 didn't have any evaluation!

Prevention practice today

The main problem of the prevention practice today is the *low implementation* of programmes mainly *with no evidence of effectiveness*

low EFF* low IMPLE = low low IMPACT

What can we, as EUSPR, do?

Interventi scolastici per l'alcool

THE COCHRANE LIBRARY

Independent high-quality evidence for health care decision making

Authors' conclusions

Jump to...

Implications for practice

Current evidence suggests that community, family, and school-based psychosocial and developmental prevention programs can be effective and could be considered as policy and practice options. Examples of effective programs include the Life Skills Training Program in the United States, the Unplugged program in Europe, and the Good Behaviour Game. However, given variability in effects between studies and between subgroups within studies, it is recommended that program content and delivery context, ideally through conducting further evaluation studies alongside any future programs.

BUONE PRATICHE!

Home

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Reviews

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- 53 trials inclusi

What can we, as EUSPR, do?

- Today, the delivery of prevention activities is not regulated in any way:
 - no qualification of professionals is needed
 - no requirements (for safety or effectiveness) of interventions are requested
 - no infrastructure exists linking science-practice-community (*Woolf. The power of prevention and what it requires. JAMA, 2008*)
 - none “stable intervention data bank” exists (Hoffman, BMJ, 2013)

A proposal

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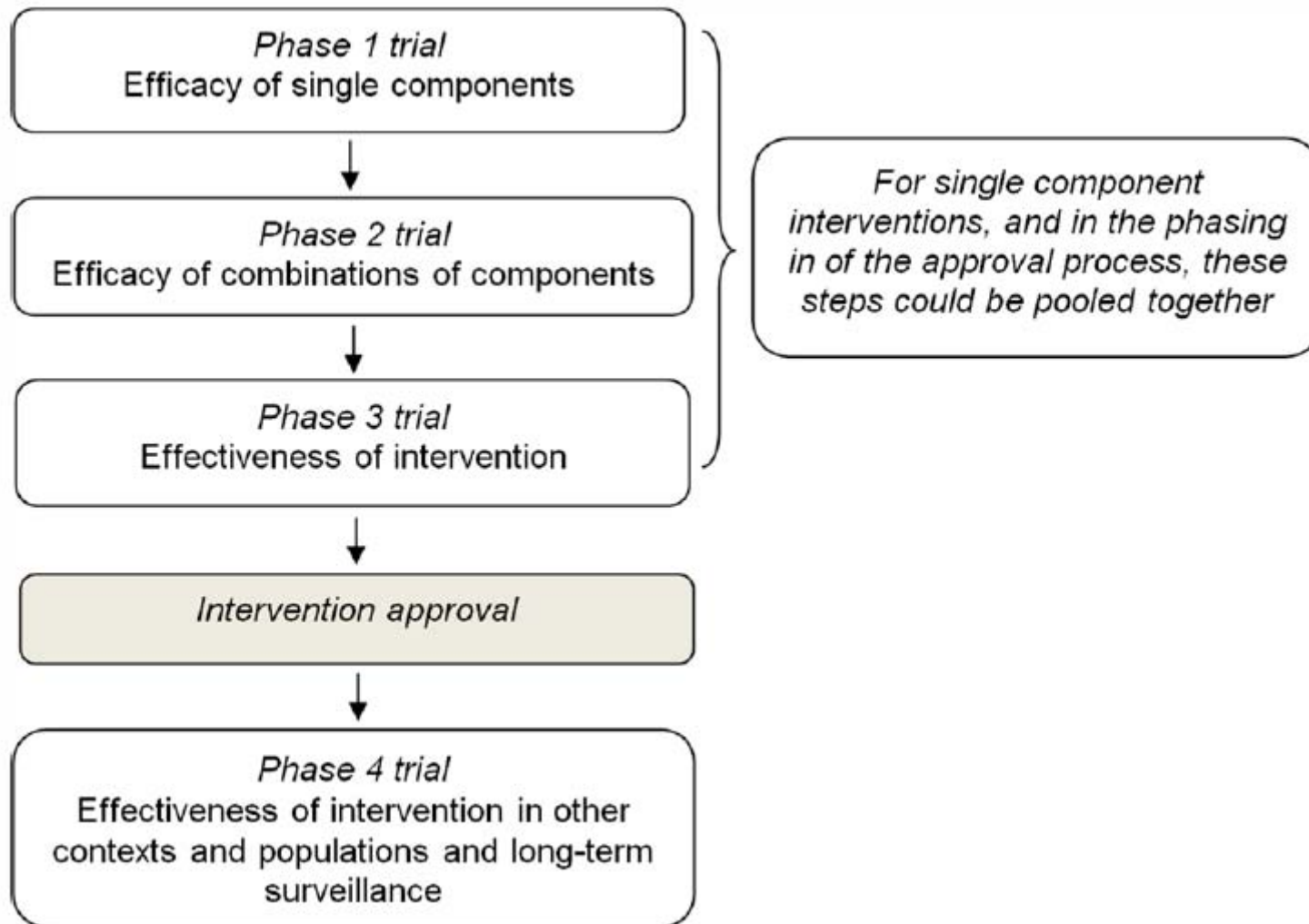
Policy Forum

Europe Needs a Central, Transparent, and Evidence-Based Approval Process for Behavioural Prevention Interventions

Fabrizio Faggiano^{1*}, Elias Allara^{1,2}, Fabrizia Giannotta^{3,4}, Roberta Molinar¹, Harry Sumnall⁵, Reinout Wiers⁶, Susan Michie⁷, Linda Collins⁸, Patricia Conrod^{9,10}

An evidence-based evaluation process

- for *all prevention interventions* (environmental, like taxation, individual, like counselling)
- *reactive* – not proactive (not based on systematic search of literature)
- based on *scientific requirements adapted* to the type of intervention (ITS, cohort studies, RCTs...)
- evaluating *effectiveness* and *readiness-to-implementation*
- providing *access to manuals* or to operational instructions



Open questions

- *phases 1 & 2:*
 - is it realistic to implement them from the beginning?
 - which methods to be fostered? Mediation analysis? MOST?
- how to assess *readiness-to-dissemination*?
- how to deal with the *copyrighted programmes*?
- how to *make “attractive”* the use of “approved” interventions?

Final remarks

- several obstacles are expected
 - resistance of practitioners and scientists
 - resistance of intervention “owners”
 - funding
 - assurance of independence
- but it is a another step in the way of strengthening the scientific status of prevention