Tapping the behaviour change potential of personalised dietary advice

Good morning Thomas! based on your PMP* and today’s schedule I would recommend the following diet and supplements.

* PMP: Personal Molecular Profiles derived from longitudinal multi-omics analysis
What is known/unknown?

Personalised Dietary Advice

How effective?

Why does it matter?
Personalised/Tailored: Advice customised to individual characteristics using information about them

Targeted/Stratified: Advice customised to group based on shared characteristics

Generic: One Size Fits All advice
What?

“Personalised to the individual’s needs OR interventions based on genetic profile of the individual”


“An approach that uses information on individual characteristics to develop targeted nutritional advice, products, or services”

Ordovas JM et al. (2018) BMJ 361: k2173
Personalised Nutrition Factors

Metabolic factors

Biological factors:
• Physical
• Genetics
• Biomarkers

Behavioural factors

• Food choices
• Eating patterns
• Past behaviour
• Beliefs

Demographic and Clinical factors

• Physical
• Psychological
• Social

“What works, how well, for whom, in what setting and why?”
Effectiveness?

Possibly if consider;

Personal Nutrition is more relevant (biological perspective)

Personalised Nutrition feels more relevant (motivates, behavioural perspective)
Does personalisation increase effectiveness?

Web-based personalised interventions were more effective in reducing body weight across 2414 adults (−1.83 kg) Vs non-personalised advice. 

Does personalisation increase effectiveness?

Web-based personalised interventions were more effective in increasing F&V consumption across 10,936 adults (0.35 servings/d) Vs non-personalised advice.

Does personalisation increase effectiveness?

The impact of communicating genetic risks of disease on risk-reducing health behaviour: systematic review with meta-analysis

Gareth J Hollands, 1 David P French, 2 Simon J Griffin, 3 A Toby Prevost, 4 Stephen Sutton, 3 Sarah King, 1 Theresa M Marteau 1

“Expectations that communicating DNA based risk estimates changes behaviour is not supported by existing evidence”
Does personalisation increase effectiveness?

Volunteer Login
- Email:
- Password:
- Logged Out.
  - Log in
  - Remember me
  - Can't access your account?

Participants who registered online for Food4Me (n=5,542)

Excluded from the study (n=3,845)

Level 0
General dietary guidelines (n=387)

Level 1
PN based on diet (n=414)

Level 2
PN based on diet + bloods (n=404)

Level 3
PN based on diet + bloods + genes
  - e.g. APOE

Food4Me RCT
Does personalisation increase effectiveness?

Celis-Morales C et al. (2017) Int. J. Epidemiol. 46, 578-588

Level 0: Generic dietary advice (Control)

Level 1: Personalisation based on DIETARY analysis

Level 2: Personalisation based on DIETARY + PHENOTYPIC analysis

Level 3: Personalisation based on DIETARY + PHENOTYPIC + GENOMIC analysis

Included genotype
“Essentially, all models are wrong but some are useful.” George E.P. Box (1987)
The perceived impact of the National Health Service on personalised nutrition service delivery among the UK public

Rosalind Fallaize¹, Anna L. Macready¹, Laurie T. Butler², Judi A. Ellis², Aleksandra Berezowska³, Arnout R. H. Fischer³, Marianne C. Walsh⁴, Caroline Gallagher⁴, Barbara J. Stewart-Knox⁵, Sharon Kuznesof⁶, Lynn J. Frewer⁶, Mike J. Gibney⁴ and Julie A. Lovegrove¹∗
Consumer reactions: What do we know?

Fig. 4. Evaluations of the ‘generating advice and advice adherence’ service attribute levels.

Consumer reactions: What do we know?

Consumer reactions: What do we know?

Provider
- Government (e.g. NHS)
- Supermarket
- Private company

Communication
- Online (e.g. direct-to-consumer)
- Face-to-face

Cost
- Free via NHS
- Insurance credits
- One-off / monthly fee

‘I wouldn’t mind doing that because I have trust in the medical profession. Whereas if this was a [...] service, not by (private health provider) and it was by (supermarket) or (pharmacy) then I’d have a problem with it’

‘I don’t think I’d be willing to pay for it [...] because I’m used to just getting everything medical free [...]’
Consumer reactions: What do we know?

Providing Personalised Nutrition: Consumers’ Trust and Preferences Regarding Sources of Information, Service Providers and Regulators, and Communication Channels

Rui Poínhos, Bruno M.P.M. Oliveira, Ivo A. van der Lans, Arnout R.H. Fischer, Aleksandra Berezowska, Audrey Rankin, Sharron Kuznesof, Barbara Stewart-Knox, Lynn J. Frewer, Maria D.V. de Almeida

9,381 people across Germany, Greece, Ireland, Poland, Portugal, Spain, the Netherlands, the UK, and Norway

Family doctors/GPs preferred as information and service providers, as well as regulators, and personal meetings was the preferred communication channel.
“Evaluation of novel health-related applications by service users and expert stakeholders is vital to ensure the appropriateness, relevance and suitability of advice given”
Personalized wellness company Arivale shuts down consumer operations

The fate of the company's recently-announced research partnerships is unclear.

By Jonah Comstock | April 29, 2019
Best Practice Approaches

➢ Regulatory and Research oversight
➢ Define standards
➢ Consumer protection/experience
➢ Multi Stakeholder Involvement and Engagement
➢ Skills and Training (Digital Health for Delivery)
Implications for stakeholders: So What?

- Personalised nutrition approaches (genotype/phenotype level) are frequently ineffective and may be counter-productive (health inequalities/message framing)

- Concerns remain about validity

- Knowledge and information not sole drivers of eating behaviour

- To support effectiveness, need engagement with consumers and nutrition professionals
Practical take home tips

• Use an approach that is;

1. Specific: Enough about personalisation and eating practices
2. Comprehensive: Considered all personalisation factors that might influence eating practices
3. Evidence-based: Critically understands approaches that are acceptable and evidence-based in context
4. Flexible: Adapted and personalised to different eating practices and people

= Practical personalised dietary advice for effective behaviour change
Behaviour change is key
Understand before you change!
Discussion Points

• Experiences people have had with personalised nutrition?
• Issues I haven’t thought about?
• Other approaches?
Thank you for your attention

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