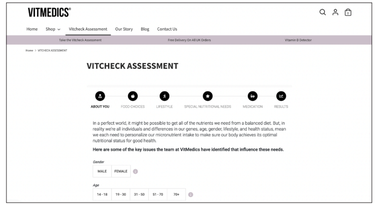
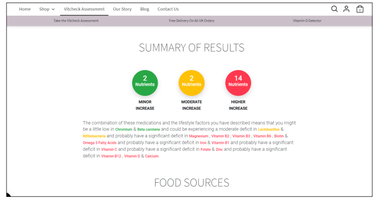
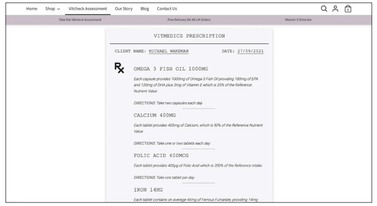
AND HOW VITCHECK WORKS

- First data is collected about the individual-sex, age, height and weight.
- Then inputs on food choices-intake of fruit and vegetables, calcium sources, oily fish, dietary preferences and food intolerances are collated.
- Finally, relevant lifestyle factors relating to exercise, smoking, alcohol intake, weight loss regimes, sunshine exposure, dietary genetic tests, and conditions requiring extra nutritional support are assessed.
- The users are presented an easy-to-use drop down menu from which to select their medication.
- Multiple medications and any consequences are added to any potential negative effects from the previous collected datapoints and the authenticated Vitcheck algorithm delivers a cumulative score of any impacts that have been identified.
- This summary is seen as a traffic light system with red as major concerns, Amber as moderate and green as minor impacts. The user can then access the comprehensive details of which specific nutrients fall into each category.
- Once these details are revealed, the first recommendation to correct any extra nutritional need is always to advise eating foods rich in the specific nutrient that is lacking.
- With every recommendation, a hyperlink to the peer reviewed reference source is available to verify the evidence.
- In circumstances where the impact of a drug or drugs upon micronutrients is major, and cannot be rectified by diet alone, a personalised corrective supplement prescription is recommended







VITCHECK IN COMMUNITY PHARMACY PRACTICE

Mike Wakeman, Vitcheck Founder and CEO explains: As a pharmacist with Masters in Nutritional Medicine and many years practical experience in this field, I firmly believe community pharmacy to be uniquely positioned to deliver this tremendous opportunity. It has taken me over 5 years of research and investment to develop the vitcheck technology and make it as easy as possible to integrate into community pharmacy practice as a stand-alone resource that can be effectively used in a day-to-day setting.

We offer a complete package to enable the total integration of Vitcheck into your pharmacy and the business to enjoy the commercial benefits that result from its use. It just takes three simple steps:-

Step 1-Licensing the vitcheck software
Licensing the Vitcheck software gives your pharmacy complete access to the database to enable personalised assessments of an individual's nutrition status to be made, dependent upon their inputs relating to life stage, lifestyle, dietary intake and medications. From this, personalised recommendations are made relating to any dietary changes that might be necessary as well as any supplements that might be needed. The license comes with a portable tablet and with a printer that allows a hard copy of the personalised recommendations to be made available to the patient. We also supply patient information leaflets to explain how the system works and the benefits delivered in terms of optimising their diet

Step 2-Fulfilling patient needs
The supplement recommendations that are generated by the Vitcheck assessment have been carefully curated to ensure nutritional requirements can be fulfilled from a small selection of products that comprehensively meet the needs of each patient. This portfolio consists of no more than 15 essential formulations that achieve this objective. This means that there is no need to stock complicated multiple formulations, simply those that are needed to ensure optimum nutrition of the individual. These products are merchandised in a ready-made free standing display unit which houses not only stock, but also the portable tablet and printer and other materials such as patient information leaflets.

Step 3-Ongoing expertise in personalised nutrition
Accessing the Vitcheck software and the means to fulfil patient recommendations is merely a starting point to becoming an accomplished player in the field of personalised nutrition. In order to help pharmacies fully engage more confidently we also provide on-line training for pharmacy staff around aspects of diet and nutrition relevant to personalised nutrition, such as condition specific recipes and lifestyle advice, as well as digital creative assets to optimise on-line communications.

VITCHECK

- A complex algorithm developed by highly experienced healthcare professionals
- Assesses Individual life stage, lifestyle, dietary habits and medication impacts on micronutrient status
- Easy to navigate database of over 3500 medications
- References over 1000 scientific studies highlighting interactions of medications on micronutrient status
- Authenticated algorithm delivers a cumulative score of any impacts from all submitted datapoints
- Validation of any recommendation via hyperlinks to peer reviewed scientific literature
- Total transparency to any user.
- Easy to understand traffic light system summary of key personalised recommendations
- Corrective dietary changes are always recommended as primary interventions
- A personalised supplement programme is constructed where necessary
- Constantly updated to reflect any changes in science
- Integration into third party platforms to provide personalised recommendations from client portfolio

COMMUNITY PHARMACY-THE IDEAL PLACE TO DELIVER PERSONALISED NUTRITION

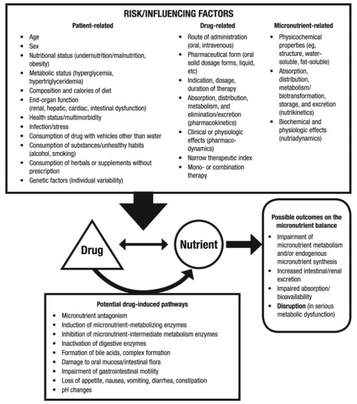
The number-one driver for personalized nutrition unequivocally lies in changes that are now occurring within the healthcare paradigm. This is a result of the reluctant acknowledgement of late that we live in a world with well over a billion people afflicted with diet-related diseases and conditions, and a dramatic recognition that the cost of care is increasing exponentially as a result.

For diabetes alone, in 2015 researchers estimated the global economic burden from the disease was $1.3 trillion per year and projected that figure to nearly double by 2030. This is creating a long overdue impetus to reverse the healthcare system from being reactive to proactive, signalling a massive opportunity for nutritional intervention at a personalized level.

And community pharmacy could and should be at the forefront of this opportunity.

HERE'S WHY-MEDICATIONS CAN IMPACT MICRONUTRIENT STATUS

The potential negative effects that foods and supplements exert upon medication/s are well elucidated with high levels of awareness amongst healthcare professionals. However, although, the converse effects that drugs might have on micronutrient status are also recognised, these occur in the literature as a more disparate and poorly collated body of evidence, meaning awareness is more limited. Nevertheless, the likely pathways are clearly understood, and the possible reasons are manyfold.



MIGHT MEDICATION ACCELERATE MICRONUTRIENT MALNOURISHMENT?

In terms of the medications that impact on nutrient status to any extent, the numbers of prescriptions written for them are staggering- And these numbers are all rising! So, in England alone, for example, over 1.1 billion prescriptions are written each year, with 450 million for the top 20 medications. Of the latter, a staggering 84% have the potential to impact on micronutrient/microbiota status. This would be higher, but that 24 million prescriptions relate to vitamin D.

Here are some of the ways this can happen.

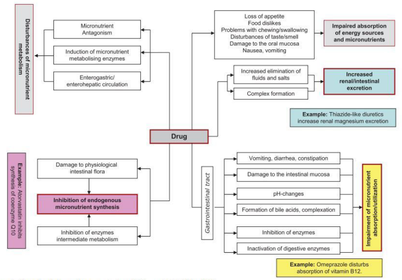
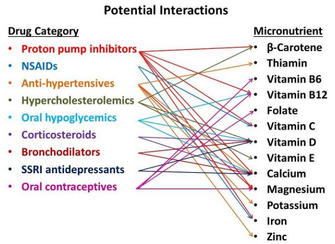


Figure 2. Disruption of micronutrient status by drugs (Gröber et al. 2006; Gröber 2009).

MULTIPLE MEDICATIONS CAN ESCALATE THIS EFFECT

With 50% of the UK population taking at least one prescription medicine daily; 25%-at least three drugs, 15%-five or more and 7%-eight or more medications, the potential additive effects are important to consider. This becomes even more of a problem the older people get, as 70% of over 75's take more than 3 prescription medications. Hence, increasing life expectancy combined with more multi-morbidities occurring with age, suggest individuals might experience decades of consuming numerous pharmaceuticals, and the unwanted effects they might induce on nutritional status. And, because often medications have an effect on more than one micronutrient (as shown here), negative effects can rapidly become cumulative as polypharmacy becomes more prevalent.



VITCHECK PUTTING THE PIECES TOGETHER

With 50% of the UK population taking at least one prescription medicine Vitcheck enables the cumulative impacts that lifestyle, life stages, diet and medication might have upon nutrient status to be assessed by employing a complex, but easy to use algorithm-based technology.

It interrogates data from over 1000 references relating to more than 3500 medicines that it indexes (by both brand and generic name) and has identified more than 4000 incidences where drugs potentially impact upon the status of one or more than 24 micronutrients and/ or the microbiome. This diagnostic also takes into consideration other important factors which might alone or together affect baseline nutritional status, such as food and lifestyle choices.

Uniquely, Vitcheck allows this data to be used to quantitatively determine any single or cumulative impacts on nutritional status to help further personalise dietary and supplement recommendations. Our research is also delivered in a format which enables any user to access the relevant peer reviewed references used as data sources and validate the suggested corrective diet and supplement recommendations.

The numbers of interactions where medications impact on micronutrient status identified by our research as of Sept 2021 are:-

Nutrient	Interactions	Nutrient	Interactions
Betacarotene	61	**Selenium**	141
Bifidobacteria	107	**Vitamin A**	83
Biotin	74	**Vitamin B1**	148
Calcium	156	**Vitamin B2**	206
Carnitine	34	**Vitamin B3**	133
Chromium	94	**Vitamin B5**	36
Co-Enzyme Q10	54	**Vitamin B6**	52
Inositol	17	**Vitamin B12**	262
Iodine	4	**Vitamin C**	121
Lactobacillus	107	**Vitamin D**	372
Magnesium	286	**Vitamin E**	131
Omega 3 fatty acids	12	**Vitamin K**	17
Potassium	119	**Zinc**	362
		Total	**4073**

Our Peer reviewed Publications related to vitcheck

- A Literature Review of the Potential Impact of Medication on Vitamin D Status. Risk Management and Healthcare Policy. 2021;14:3357.
- Metformin and micronutrient status in Type 2 diabetes: does polypharmacy involving acid-suppressing medications affect vitamin B12 levels? Diabetes, Metabolic Syndrome and obesity: Targets and Therapy. 2020
- Micronutrient Status in the Elderly Plays in Their Immune Response to Viral Respiratory Infections and the Potential Compromising Effects Medications Might Cause. Journal of Advances in Medicine and Medical Research 32(8): 59-85, 2020; Article no.JAMMR.57391
- An Interactive Database to Quantitatively Assess the Impact of Medication on Nutrient Status. International Journal of Sport Nutrition and Exercise Metabolism, 2019, 29, S12
- Development of an evidence based, interactive database to quantitatively assess the impact of medication on the nutrient status of patients pre-and post-bariatric surgery Obesity Surgery (2019) 29. S13
- A Review of the Effects of Oral Contraceptives on Nutrient Status, with Especial Consideration to Folate in UK. Journal of Advances in Medicine and Medical Research, 2019, 30, 1-17.
- Medicated Malnourishment. BPUK ISBN 978-1-913284-00-8