MedNut Mail

The How, When, Where, Which and Why of pharmacotnutrition

Potential pharmaconutrition research topics 3

Y Coleman

25th November 2021

https://medicationsandnutrition.online

Commentary

Nutrition research, including pharmaconutrition, is an interesting and challenging field, with an added dimension that is not essential to any other area of research – the reversibility/irreversibility component of physiological response that is integral to all findings.

Do you want to be someone who contributes to good quality research in the area of pharmaconutrition and experience multiple benefits such as -

- addressing some of the unique challenges of nutrition-related research,
- satisfaction that the knowledge generated will probably and positively impact the quality of life of long-term consumers of prescribed drugs,
- contributing to the emergence of this fascinating area of research, and
- being a leader in this field?

This is the third editorial that identify gaps in our knowledge in this field so that everyone understands just how much we do not know.

Further gaps in our knowledge -

1. identification of the drugs administered by the non-oral route for which a dietary modification may be necessary – for example caffeine and bronchodilators.
2. a simple strategy for the administration of drugs to people with impaired swallow reflex that is compliant with manufacturers' recommendations and also the International Dysphagia Diet Standardisation Framework https://iddsi.org/
3. some research has found that people with diabetes are more likely to develop epilepsy, there does not appear to be any research whether people with epilepsy are at higher risk of diabetes, however because both fit within the dysfunctional mitochondria umbrella, it may also be bidirectional ie because you have one your risk of the other is increased. Some of the older anti-epilepsy drugs are associated with altering glycaemic control, and with competitively inhibiting biotin absorption. Biotin is important in five stages of haemoglobin formation and also in glucose metabolism. If a person with epilepsy is prescribed any of these older drugs and has brittle diabetes control, then perhaps a low biotin intervention may confer benefit without causing

further harm – we need the evidence.

4. the potential for a detrimental effect of drugs on eicosanoid production.
5. excipients (all the stuff around the active ingredient) may also affect the health of consumers, and examples include -
    1. lactose – a common ingredient; unacceptable for those with a lactose and/or galactose intolerance,
    2. gluten – becoming less common; unacceptable for those with gluten enteropathy,
6. as exampled by the nutrition support products that are available globally, should all prescribed medications, prescribed globally, be lactose-free and gluten-free as a basic standard?
7. research techniques have changed, measurement parameters have changed, outcomes have changed - is there a role for old research beyond being a starting point? For example, both the role and acceptable range for vitamin D have changed significantly since the early twenty noughties therefore how valid is the old vitamin D research for current clinical decision-making and especially pathology laboratory ranges?

These gaps in our knowledge of the nutritional ramifications of pharmaceuticals must eventually be addressed, and as they are addressed so too will there be an improvement in outcomes for those requiring these interventions.

What actions will you initiate to contribute to the body of knowledge in this field

- submit a case study for publication?
- submit a paper for a conference presentation?
- write an overview on some aspect of interest to you?

Conclusion

There is so much we do not know and so we make clinical decisions on a daily basis that impact people's lives based on assumptions and first principles - it is time to start addressing these gaps in knowledge.

Case study

Medical History with Nutritional Aspect

Amputation	☐	Constipation	☐	Dysphagia	☐	MND	☐
Anaemia	☐	CVA	☐	Enteral Feed	☐	MS	☐
Arthritis	☑	CVD	☐	Falls	☐	Osteoporosis	☑
Cancer	☐	Dementia	☑	Fracture	☑	PD	☐
CCF	☐	Dentures	☐	Frailty	☐	Pressure Area	☐
Chest Infection	☐	Depression	☑	Gout	☐	Renal	☐
COAD	☐	DM Type 1	☐	Hypertension	☐	Ulcer	☐
Confusion	☐	DM Type 2	☐	Incontinent	☑	UTI	☐

Food Allergies: DEAFNESS, altered thyroid function, cataract

Other: colitis, PR bleeding, tinnitus, GORD, thalassaemia

Biochemistry with Pharmaconutritional Consequences

Na:	138	mmol/l	Hb:	100	g/L	Albumin:	27	g/L	BSL:		mmol/l
K:	4.2	mmol/l	Lymph:	1.3		Total Protein:	63	g/L	HbA1C:		
Urea:	4.1	mmol/l	MCV:	63	mmol/l	B12:	225	pmol/L	INR:		
Creatinine:	0.064	mmol/l	Zn:		umol/l	Folate:	40	nmol/L	TSH:	2.39	mIU/L

Other: , TRF 1.1, satn 22%, ferritin 308, T4 19.7, T3 2.5, vit D (03/19) 20, (08/19) CRP 35, ESR 23, Ca 2.15, Ca corr 2.29, Mg (

Medications That May Adversely Affect Nutritional Status

Drug	Vits + Mins	bpp >90%	N/V	C/D	Wt	App	Tst	Thir	Sal	Drlg	d m	Dys	BSL
Cholecalciferol	(25 mcg/day)	☐					☐				☐	☐	☐
EBIXA		☐	NV	CD	↓	↕	☐				☐	☐	☑
Mirtazapine		☐	N	D	↑	↑	☐				☑	☐	☐
Paracetamol		☐	NV	CD			☐				☐	☐	☐
SALOFALK		☐	NV	D			☐				☐	☐	☐
SOMAC	(40 mg/day) B1, B12, Ca, Fe,	☑	NV	CD		↓	☑				☑	☐	☐
Thyroxine	(0.075 mg/day) A, Ca, carnitin	☑	V	D	↓		☐				☐	☐	☑
		☐					☐				☐	☐	☐

Extra drug:

Comments – medication and nutrition impacts (direct and indirect) only

Relevant available biochemistry indicates

- low Hb - associated with increased risk of falls, and poor appetite; likely to be low due to somac;
- low albumin - typical indicator of nutritional status; influenced by inflammatory response; may affect somace and thyroxine efficacy. There is disagreement between pathology laboratories with regard to appropriate albumin range with either 35 g/L or 40 g/L being most commonly acceptable; advisable to recheck status;
- low B12 – likely due to somac; intervention recommended. There is disagreement between pathology ranges and research findings with regard to appropriate B12 levels. Neuro-imaging research found a direct causal link between B12 status and memory impairment; it also found increasing memory impairment as B12 levels dropped even whilst within currently defined acceptable ranges and that B12 interventions are effective once levels are less than 300 pmol/L;
- marginal Fe and elevated ferritin - typically indicates depletion of iron stores; most likely due to somac.

Regular monitoring sodium levels recommended whilst mirtazepine prescribed.

Thyroxine triples urinary excretion of carnitine.

Dietary levels of caffeine intake in conjunction with paracetamol inhibit antinocieception.

Concurrent ingestion of paracetamol and iron resulted increased rate of iron absorption and decreased extent of paracetamol absorption; the authors advise drug and iron to be administered at different times from each other.

Iron deficiency results in reduced activity of the heme-dependent thyroperoxidase (TPO) with consequent impairment to thyroid hormone production.

Somac decreases B12, vitamin C, magnesium, zinc and iron absorption, may decrease calcium absorption, and decreases thiamine availability.

Mrs AI is a small, pale, frail, deaf lady with thyroidy eyes and who did not respond appropriately to my questions.

Since Mrs AI has an indeterminate weight status, advisable to check thyroid function and clarify status - as thyroxine is weight-dependent, her weight fluctuations may be impacting thyroxine effect. Zinc alone or in

conjunction with selenium support thyroid function therefore as it is likely somac has impacted zinc status, advisable to check zinc status and consider a short term (90-120 days) intervention if levels are low; do not administer at same time as thyroxine as there is high risk of a drug-nutrient interaction.

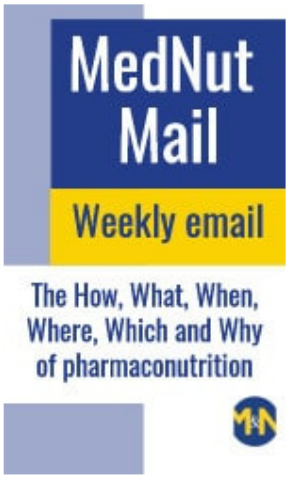
There seem to be several main issues that result in inadequate food intake including total number of prescribed drugs with side effects that directly include poor appetite or indirectly impact appetite – ie 6 prescribed medicines have the capacity to negatively impact appetite either directly or indirectly.

Thiamine transporters also transport choline, and both nutrients are inhibited by mirtazapine and somac. Advisable to monitor thiamine status and if low then interventions recommended, and advisable to administer either one hour before or 2 hours after mirtazepine and somac administration.

What else would you include?

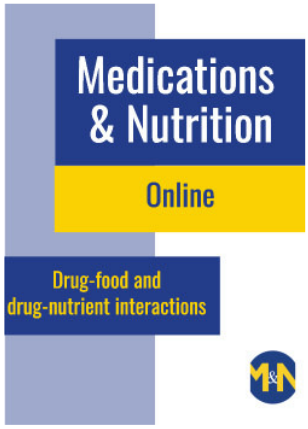
Medications have profoundly and positively changed health outcomes however they do generally come with some nutritional harms. By identifying and addressing the nutritional harms, optimal health outcomes are closer to being achieved.

You may be interested in some of our other products …



MedNut Mail is our free weekly email that identifies and comments upon some aspect of pharmaconutrition.

For more information click here.



Medications have profoundly and positively changed health outcomes however they do generally come with some nutritional harms. By identifying and addressing the nutritional harms, optimal health outcomes are closer to being achieved.

This resource is for innovative clinicians looking to expand their expertise so they can continue to provide their best service to the people in their care.

For more information click here.