MedNut Mail

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

Templates for common clinical observations 5

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https://medicationsandnutrition.online

Commentary

Templates are useful for ensuring essential information is passed on without any aspect being overlooked as they can be copied, pasted and modified as required - the days we are tired or rushed or distracted are the days we are likely to overlook something important.

These templates focus on statins.

Statins interfere early in the cholesterol metabolic pathway and consequently decrease -

- vitamin D availability - vitamin D monitoring and intervention recommended,
- production of CoQ10 - important in cellular energy production; CoQ10 intervention recommended,
- DHEA production - low DHEA associated with increased risk of metabolic syndrome; intervention recommended.

The Scottish Lipid Study found that a 5-year prescription of atorvastatin confers 20 years of benefit; other evidence indicates statins administered weekly (for those who don't tolerate daily doses) also confer adequate benefit, therefore advisable to –

- clarify duration of statin prescription and consider its cessation if > 5years, especially if person is aged 80+ years;
- check lipid levels and if within acceptable range then review necessity for its continued prescription for **(a defined period such as 6 months or one year)**.

Marginal cholesterol - currently prescribed **XXXXX (statin)**. There is variability between pathology laboratories with regard to appropriate lower acceptable cholesterol level - some pathology ranges have set the lower acceptable limit at 3.5 units, others 3.0 units, and some do not set a lower limit. Cholesterol is important in maintaining the integrity and fluidity of cell membranes and CoQ10 production as well as being a precursor for a several steroid hormones, bile acids and vitamin D therefore there is a risk if levels are too low.

XXXXX is a **man/lady** of size likely due to several factors including limited activity, healthy appetite, and side effects of prescribed drugs such as **XXXXX (statin).** Statins decrease metabolism by decreasing CoQ10 availability which is important in energy production in the mitochondria; mitochondrial dysfunction is now being cited as a

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contributing factor to many western-style diseases including some of **XXXXX's** diagnoses therefore advisable to consider trialling a CoQ10 intervention for **(a defined period such as 3 months)**.

Evidence indicates both Multiple Sclerosis and diabetes are considered to be part of the dysfunctional mitochondria umbrella of diverse disorders - and statins are contra-indicated if the mitochondria are dysfunctional. Advisable to review necessity for continued prescription of **XXXXX**.

Since **XXXXX has commented the food has minimal taste/ has developed a dementia eating pattern whereby he/she will start to lose weight**, advisable to review **XXXXX (statin)** prescription as **XXXXX (statin)** side effects profile includes altered sense of taste. However, **XXXXX's** diagnoses include diabetes which is deemed part of the dysfunctional mitochondria umbrella of diverse disorders – and statins are contra-indicated in the presence of dysfunctional mitochondria. Further, there is an interrelationship between glycaemic control and lipid control, and **XXXXX** has well-controlled glycaemia. Given the combination of well-controlled glycaemia and dysfunctional mitochondria advisable to review necessity for **XXXXX (statin)** prescription.

Are you creating a list of templates to optimise your assessment reports such as -

- templates that suit your clinical style and client base?
- modifying these templates for your clinical reports?
- identifying nutrients that are negatively-impacted by prescribed medications and commenting on the proposed mechanism of action?
- Compiling a range of templates relating to the negative impacts of statins on various nutrition factors?

Conclusions

The list of templates being made available is steadily growing – the question is – are you integrating them in some format into your daily clinical practice?

Templating common observations and identifying the modifiable bits can result in reduced time doing paperwork and ultimately better quality of care provision.

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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:

Other: hypercholesterolaemia, AF, PHx TB

Biochemistry with Pharmaconutritional Consequences

No recent relevant results available that may have a pharmaconutrition component.

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
ATACAND PLUS	Ca, Cl, K, Mg, Na	☑	NV	CD		↓	☑				☐	☐	☐
Atenolol		☐	NV	CD			☐				☑	☐	☑
COLOXYL WITH S		☐		D			☐				☐	☐	☐
CRESTOR		☑	N	C			☑				☐	☐	☐
MAXOLON		☐	N	D			☐				☐	☐	☐
Metformin	(08:00, 17:00) B12	☐	NV	D	↓	↓	☑				☐	☐	☑
NEXIUM	(40 mg/day) B1, B12, Ca, Fe,	☑	NV	CD	↑		☑				☑	☐	☐
Paracetamol		☐	NV	CD			☐				☐	☐	☐
Pregabalin		☐	NV	CD	↓	↑	☑		↑		☑	☑	☐
Sertraline	Na	☑	NV	CD	↑	↑	☐				☑	☐	☐
STEMETIL	B2, folate	☑		C	↑		☑				☑	☐	☑
		▩					▩				▩	▩	▩

Extra drug: laxacon, apixaban, norspan

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

Biochemistry comments

No recent relevant biochemistry available. Advisable to check plasma proteins (albumin, total proteins) as they are the primary transporters for five of the prescribed drugs and hypoproteinaemia may alter their effects and side effects.

Glycaemia comments

BSLs (Jun) - before breakfast - 5.6-13.4, mostly 6-9; recommended range 4-6; tested daily before breakfast.

Diabetes drugs

- metformin has a duration of 12 hours.

Diabetes drugs coverage

- before breakfast BSLs - minimal, if any, coverage from previous morning's metformin or previous evening's metformin;
- before evening meal BSLs - covered by current morning's metformin.

Bowel management comments

Bowels –

- regular aperients prescribed,
- oral PRN aperient prescribed,
- no Nurse Initiated interventions administered.

Staff comments

Some staff advise Mrs ABO mostly eats well whilst others state she does not eat well - especially at breakfast.

Observations

Mrs ABO is a small, pale lady who told me that when she gets up in the mornings she often feels dizzy and feels like vomiting.

Pharmaconutrition comments

Currently prescribed 8 medications that are likely to alter glycaemia – being Atacand Plus, atenolol, Crestor, Maxolon, metformin, pregabalin, sertraline, Stemetil.

Atacand plus decreases vitamin D availability, and increases urinary excretion of thiamine and magnesium.

Chronic use of Coloxyl with senna may promote excessive loss of water and electrolytes, especially potassium, and their regular monitoring recommended.

Metformin decreases B12 absorption and thiamine availability - there is now a recommendation for regularly monitoring B12 levels ie at least annually.

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

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Concurrent administration of metformin with proton pump inhibitors and/or H2-antagonists is associated with lower B12 levels and the authors suggest an additive effect on B12 malabsorption.

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 drug absorption; the authors advise drug and iron to be administered at different times from each other.

Phenothiazine derivatives such as Stemetil are similar in structure to riboflavin and consequently decrease riboflavin availability therefore advisable to check status and if low then riboflavin intervention advisable.

Currently prescribed three drugs that decrease thiamine availability - being Nexium, metformin and sertraline. Thiamine is important in glycaemic and lipid control, and energy production and inadequacy signs and symptoms include lethargy. When there is insufficient thiamine then food is converted to alternatives such as fat stores, cholesterol and triglycerides. Mrs ABO may benefit from a low dose (~ 10 mg/day), short term (90-120 days) thiamine supplement.

Currently prescribed three drugs that decrease B2 (riboflavin) absorption - being Atacand Plus, atenolol and Stemetil. Riboflavin is important in mitochondrial function, and is gaining traction as an important antioxidant. Advisable to check status and if low then short term (90-120 days) intervention advisable.

Currently prescribed 2 drugs that negatively impact sodium status, being sertraline and Atacand plus. Hyponatraemia is associated with increased risk of falls and poor appetite therefore advisable to clarify sodium status and monitor on a regular basis

Currently prescribed two drugs that decrease B12 absorption - being metformin and Nexium. Evidence shows a direct causal link between decreasing B12 status and increasing memory impairment even whilst B12 within acceptable range. The authors recommend B12 interventions once levels are less than 300 pmol/L. Based on these findings advisable to check B12 levels and commence interventions if B12 levels below 300 pmol/L.

Currently prescribed two drugs that decrease magnesium absorption - being Atacand plus and Nexium. Magnesium deficiency manifests as confusion, disorientation, personality changes, loss of appetite, depression, muscle cramps, tingling, numbness, hypertension, cardiac dysrhythmia, seizures. Magnesium is an intracellular ion therefore serum levels are unlikely to detect early depletion of status. Cellular magnesium status is unknown whilst magnesium levels within

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acceptable range however if magnesium levels are low then typically indicates significant cellular depletion and intervention recommended.

Currently prescribed 2 drugs that decrease zinc absorption – being Atacand Plus and Nexium. Zinc is important in a range of body functions including sense of taste, glycaemic control and the immune system function therefore advisable to clarify zinc status and if low then intervention recommended. Zinc interventions are unlikely to be effective whilst a proton pump inhibitor is prescribed.

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Given Crestor is prescribed advisable to check vitamin D levels and if low then intervention recommended.

Mrs ABO is prescribed 7 medications that include vomiting in their side effects profiles therefore advisable to clarify whether any of these drugs are contributing to her feelings of vomiting in the mornings.

Since Mrs ABO is pale, advisable to check iron levels and if low then short term (90-120 days) intervention recommended. The effectiveness of oral iron interventions is questionable whilst a proton pump inhibitor is prescribed therefore advisable to consider a non-oral iron intervention.

Mrs ABO's diagnoses include chronic pain - nutritional factors that may be useful to consider in pain management include -

- **vitamin D** – currently no intervention. Evidence indicates increasingly brittle pain control with decreasing vitamin D levels. Currently prescribed **Crestor** which decreases vitamin D status. Advisable to check vitamin D levels and if still low then review current vitamin D management strategy
- **vitamin C** - pain increases the reactive substances (formerly Reactive Oxygen Species) within cells. Vitamin C is important in quenching reactive substances and if there is insufficient vitamin C then cell status becomes compromised and the cells typically die which also causes pain. Advisable to consider a vitamin C intervention. Vitamin C is not considered part of the pain management armament however it won't cause harm and evidence suggests it may confer benefit. Currently prescribed Crestor which decreases conversion of vitamin C to its active form.

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- **evidence indicates substantial relief of neuropathic pain** by thiamine, pyridoxine and cyanocobalmin separately, and in combination there was a synergistic benefit; several prescribed medications interfere with the availability of these 3 nutrients therefore advisable to monitor statuses/stati on a regular basis ie at least annually.
- **low B12 exacerbates elevated TNF-α** which is an inflammatory response marker; elevation of the inflammatory response can include a pain response and currently prescribed Nexium and metformin therefore advisable to check B12 status. There is disagreement between pathology ranges and research findings with regard to appropriate B12 levels - recent neuro-imaging research shows a direct causal link between B12 status and memory impairment, and recommend B12 interventions once levels are less than 300 pmol/L.
- **magnesium** – proposed mechanism magnesium blocks the NMDA receptor channels in the spinal cord and thus limits the influx of calcium ie reduces the risk of excitotoxicity and consequent exacerbation of pain. Currently prescribed Atacand plus and Nexium which decreases magnesium absorption.

Many of Mrs ABO's prescribed, longterm medications inhibit the absorption, distribution and excretion of, or displace the transport of, thiamine and choline. In order to minimise the sustained negative impacts of sustained inhibition and nutrient displacement, advisable to consider a thiamine and choline intervention that is administered at a different time from the prescribed medications.

OCT1 inhibitor – metformin, Nexium, sertraline

OCT1 substrate – atenolol, Maxolon, metformin

OCT2 inhibitor – Maxolon, sertraline

OCT2 substrate – atenolol, Maxolon, metformin

OCT3 substrate – metformin, sertraline

MATE inhibitor - atenolol

MATE substrate – atenolol, metformin

THTR2 inhibitor – sertraline, metformin

THTR2 substrate - metformin

OCTN1 substrate - metformin

What else would you include?

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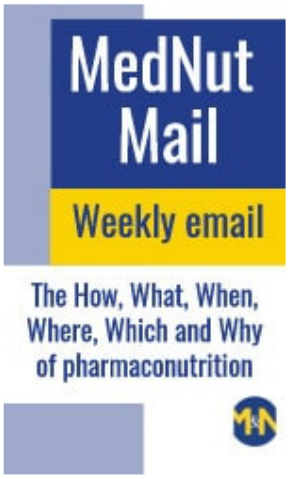

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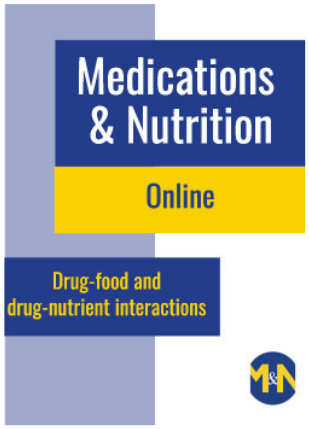

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