






# Vitamin B12 Deficiency

"Can you just pop in and see Mrs Bloggs for her B12 injection?" Vitamin B12 deficiency is a very common problem, with an estimated prevalence of up to 20% in patients over 60. It can lead to a variety of clinical manifestations, but is often identified from 'routine' investigations in asymptomatic patients showing macrocytic red blood cells. GP registrars need to know when and how to test for Vitamin B12 deficiency, and how to manage it appropriately.

<b>TEACHING AND LEARNING AREAS</b> 	<ul style="list-style-type: none"> <li>• Pathophysiology of vitamin B12 deficiency</li> <li>• Risk factors for vitamin B12 deficiency - diet, bowel disease, medications, <a href="#">refugees</a></li> <li>• Clinical manifestations of vitamin B12 deficiency</li> <li>• Investigation of vitamin B12 deficiency</li> <li>• Approach to management</li> </ul>				
<b>PRE-SESSION ACTIVITIES</b> 	<ul style="list-style-type: none"> <li>• Read the 2017 AAFP article <a href="#">Vitamin B12 Deficiency: Recognition and Management</a></li> </ul>				
<b>TEACHING TIPS AND TRAPS</b> 	<ul style="list-style-type: none"> <li>• While population screening is not recommended, vitamin B12 deficiency should be sought in high risk patients e.g. bowel disease, vegans</li> <li>• Consider vitamin B12 deficiency in patients with peripheral neuropathy and dementia</li> <li>• Intrinsic factor antibody has low sensitivity but is highly specific i.e. if positive, it is essentially diagnostic of pernicious anaemia</li> <li>• Checking parietal cell antibodies routinely is not recommended as it has poor specificity</li> <li>• Consider testing for methylmalonic acid in equivocal cases i.e. normal or low-normal B12 with macrocytosis and/or clinical manifestations</li> <li>• Non-pernicious anaemia causes of vitamin B12 deficiency may not need lifelong therapy and stopping therapy may be considered</li> <li>• Oral vitamin B12 replacement is a reasonable option in patients who are asymptomatic, have mild disease and have no malabsorption</li> <li>• Consider screening patients on long term PPIs or H2 blockers</li> </ul>				
<b>RESOURCES</b> 	<table border="1"> <tbody> <tr> <td data-bbox="331 1731 432 1827"><b>Read</b></td> <td data-bbox="432 1731 1487 1827">RCP article 2015 <a href="#">Vitamin B12 deficiency – A 21st century perspective</a></td> </tr> <tr> <td data-bbox="331 1827 432 1917"><b>Listen</b></td> <td data-bbox="432 1827 1487 1917">2014 Radio National Health report story - <a href="#">The link between acid suppressing medications and vitamin B12 deficiency</a></td> </tr> </tbody> </table>	<b>Read</b>	RCP article 2015 <a href="#">Vitamin B12 deficiency – A 21st century perspective</a>	<b>Listen</b>	2014 Radio National Health report story - <a href="#">The link between acid suppressing medications and vitamin B12 deficiency</a>
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<b>FOLLOW UP &amp; EXTENSION ACTIVITIES</b> 	Registrar to undertake clinical reasoning challenge and discuss with supervisor				



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## Clinical Reasoning Challenge

Shirley is a 66 year old retired accountant who has been recalled to the surgery with a low serum vitamin B12 level. Original testing revealed macrocytosis on FBC but no anaemia. Folate is normal. Shirley denies any symptoms of any kind. She is a non-smoker and does not drink alcohol.

QUESTION 1. What are the MOST IMPORTANT key features of history in helping to identify a cause for Shirley's vitamin B12 deficiency? List up to FOUR.

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_

QUESTION 2. All these features are absent. What is the MOST LIKELY diagnosis? Write in note form, your single MOST LIKELY diagnosis.

- 1 \_\_\_\_\_

QUESTION 3. What investigations (if any) would you order to help confirm your diagnosis? List, in note form only, the MOST IMPORTANT investigations you would order. List up to TWO.

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_

QUESTION 4. What is the MOST IMPORTANT next step in Shirley's management? Write in note form, the MOST IMPORTANT next step.

- 1 \_\_\_\_\_



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## ANSWERS

### QUESTION 1

What are the MOST IMPORTANT key features of history in helping to identify a cause for Shirley's vitamin B12 deficiency? List up to FOUR.

- Past history of bowel disease e.g. Crohn's disease
- Past history of bowel surgery e.g. ileal resection, gastrectomy
- Medications e.g. PPI, H2 antagonists, metformin
- Nutritional/diet i.e. lack of animal source foods
- History of other auto-immune diseases

### QUESTION 2

All these features are absent. What is the MOST LIKELY diagnosis? Write in note form, your single MOST LIKELY diagnosis.

- Pernicious anaemia (chronic auto-immune gastritis)

### QUESTION 3

What investigations (if any) would you order to help confirm your diagnosis? List, in note form only, the MOST IMPORTANT investigations you would order. List up to TWO.

- Intrinsic factor antibodies
- Parietal cell antibodies have poor specificity and are not routinely recommended

### QUESTION 4

What is the MOST IMPORTANT next step in Shirley's management? Write in note form, the MOST IMPORTANT next step.

- Replacement with intramuscular or oral vitamin B12