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## Pellagra

### What is pellagra?

Pellagra is a disease characterised by diarrhoea, dermatitis and dementia. If left untreated, death is the usual outcome. It occurs as a result of niacin (vitamin B-3) deficiency. Niacin is required for most cellular processes. Since tryptophan in the diet can be converted to niacin in the body, both of these need to be deficient for pellagra to develop.

### What causes pellagra?

Pellagra is caused by a deficiency in niacin. This can occur in 2 ways:

- Primary pellagra results from inadequate niacin and/or tryptophan in the diet (mainly in developing countries or poverty stricken areas)
- Secondary pellagra occurs when there is enough niacin in the diet but something prevents its absorption and processing. Causes of secondary pellagra include:
  - Chronic alcoholism
  - Prolonged diarrhoea
  - Gastrointestinal diseases such as ulcerative colitis
  - Liver cirrhosis
  - [Carcinoid tumours](#)
  - Hartnup disease (tryptophan metabolism disorder)
  - Drugs e.g. isoniazide, [azathioprine](#)

### What are the signs and symptoms of pellagra?

The classical triad of symptoms are diarrhoea, dermatitis and dementia.

Pellagra in patient with Hartnup disease



Site	Clinical features
Skin	<ul style="list-style-type: none"> <li>• The first sign is reddened skin with superficial scaling in areas exposed to sunlight, heat</li> </ul>

	<p>&amp; friction. This may resemble severe <a href="#">sunburn</a> then gradually subsides leaving a dusky brown-red colouration</p> <ul style="list-style-type: none"> <li>• The rash is usually symmetrical with a clear edge between affected and unaffected skin</li> <li>• There may be itching or a burning sensation</li> <li>• In time the skin becomes thick, hard, scaly and cracked. Bleeding may result in blackened crusts</li> <li>• Lesions may occur anywhere on the body especially the hands, arms, lower legs, feet, face, and neck (known as Casal's necklace)</li> <li>• Lips, tongue and gums may be sore and peeling</li> </ul>
Gastrointestinal	<ul style="list-style-type: none"> <li>• Diarrhoea occurs in 50% of cases</li> <li>• Poor appetite, abdominal pain, nausea and vomiting are common</li> <li>• It may be difficult to eat and drink, leading to further malnutrition</li> </ul>
Neurological	<ul style="list-style-type: none"> <li>• Initially symptoms of apathy and slight depression may go unnoticed</li> <li>• Other symptoms include headache, confusion, irritability, restlessness, anxiety, tremor, delusions, disorientation and psychosis</li> <li>• Patients eventually become stuporous, comatose and may die</li> </ul>

## What treatment is available?

Pellagra can be effectively cured with intravenous or oral niacin or nicotinamide. Adequate doses to treat secondary pellagra are quite hard to get hold of in New Zealand!

An improvement in primary pellagra should be seen within two days of commencing treatment. A high protein diet supplemented with B-group vitamins is needed for complete recovery. Secondary pellagra may be harder to treat in view of its possible causes.

Skin lesions may be treated with topical [emollients](#). [Sun protection](#) is important during the recovery phase. Cover up and apply a broad spectrum [sunscreen](#) to all exposed areas daily.

### Related information

#### References:

Book: Textbook of Dermatology. Ed Rook A, Wilkinson DS, Ebling FJB, Champion RH, Burton JL. Fourth edition. Blackwell Scientific Publications.

#### On DermNet NZ:

#### Other websites:

- [Pellagra](#) – emedicine dermatology, the online textbook

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DermNet does not provide an on-line consultation service.

If you have any concerns with your skin or its treatment, see a [dermatologist](#) for advice.

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