FOOD STANDARDS Australia New Zealand
Te Mana Kounga Kai – Ahitereiria me Aotearoa

The challenge of matching food consumption data with hazard occurrence data

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Contents

- Using an example, discuss some of the challenges

- Describe how we deal with these challenges in Australia

Australian situation

- Dietary exposure assessments using national food consumption data for > 10 years
- Covering range of hazard types except microbiological hazards
- Customised dietary modelling & food composition software
- Use consumption data from 4 surveys

Codex definition of hazard:

"A biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect"

Challenge 1

Number of foods with hazard occurrence data will be less than number of different foods consumed

Therefore ...

Data systems should allow similar foods to be grouped for matching to hazard occurrence data for a more limited range of foods

Hazard occurrence data: Cadmium in white bread

Consumed foods that are white bread:

- Bread, from white flour
- Bread, from white flour, sourdough
- Bread, from white flour, added calcium
- Bread, from white flour, crusty
- Bread, flat style, from white flour, etc

Challenge 2

Foods will be consumed for which we do not have hazard occurrence data

OR

We may have hazard data but no reported consumption of that food

Therefore ...

Scientific judgement will always be needed in matching consumption and hazard occurrence data

Challenge 3

Foods as consumed may be in a different state to the hazard data foods

(e.g. cooked *vs* raw, processed *vs* unprocessed, dry *vs* mixed with water)

Therefore ...

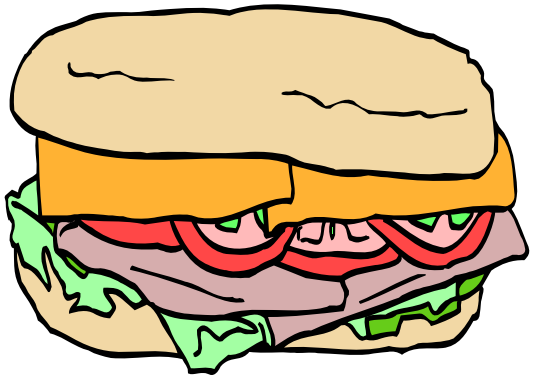
You need to be able to apply conversion factors to the data:

- Processing loss or gain factors
- Weight change factors
- Hydration factors
- Nutrient retention factors

Challenge 4

Hazard occurrence data are usually for simple foods, but foods as consumed are often mixtures of different foods

Bread 50%
Vegetables 25%
Cheese 25%



Therefore ...

You need a system that apportions foods into their component ingredients so you can match the ingredients to their hazard occurrence data

Challenge 5

Each hazard has unique properties and hazard levels will be influenced by differing factors

Therefore ...

Coding or classification systems needs to be flexible to cope with a wide range of possible groupings

Hazard occurrence data:

~~Cadmium~~ Acrylamide in white bread

Consumed foods that are white bread:

- Bread, from white flour
- *Bread, from white flour, crusty*
- Bread, from white flour, sourdough
- Bread, from white flour, added calcium
- *Bread, flat style, from white flour*

Other considerations

You need the capacity to match foods across different surveys through a coding system, and to add new food groups

Australian approach

Each consumed food is matched to up to 3 different classification systems:

- Nutrient coding – based on US NHANES groups
- Food additive codings –Codex classifications for processed foods
- Raw commodity codings –Codex agricultural commodity classification

Classification of cow's milk

Coding system	Code
National nutrition survey	19102001
Food additive classification	1.1.1
Raw commodity classification	ML812

Applying conversion factors

Where foods from the Nutrition Survey are in a different form to the surveyed food

Factor

Recipes

Used when foods are composed of more than one other food

=

70%

+

30%

White bread with jam

Ingredient	Additive code
Bread, white, 70 g	7 Bread and bakery products
Strawberry jam, 20 g	4.3.4 Fruit & vegetable spreads

Ingredient	Raw commodity code
Wheat flour, white, 30 g	CF1211 Wheat flour
Soy flour, 1 g	VD541 Soy bean
Strawberry, 40 g	FB 275 Strawberry
Sugar, 15 g	GS659 Sugar cane

Challenge 6

Matching food consumption data to hazard occurrence data is time consuming, resource intensive and requires staff with knowledge of food processing, cooking and data management, and an ability to focus on detail.

In summary

- Hazard occurrence data may not directly match all the foods people eat
- Classification systems must be flexible
- Need the ability to apply numerical factors
- A recipe system for mixed foods
- Scientific judgement must be applied
- Skilled staff are key

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