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KING EDWARD'S

HOSPITAL FUND FOR LONDON

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HOSPITAL CATERING ADVISORY SERVICE

SOURCES OF WASTE IN CATERING

SECOND EDITION

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In these times of shortages, rising prices, deficiency of skilled labour and restricted budgets, the elimination of waste should be a major concern of all who are in charge of catering in hospitals. The administrative control of food in a hospital may be satisfactory, but it often happens that a considerable waste of time, money and materials is caused by lack of experienced or mis-applied knowledge in those responsible for catering.

The more important aspects of this vital matter are dealt with in this circular. They are worthy of close attention, for waste can lower the general standard of catering, as well as raise the cost of feeding.

1. BUYING

The knowledge required to buy wisely cannot be learnt from books. Although a great deal has been written on this subject, and although experience is of course the best teacher, the following facts and considerations would seem to merit restatement.

(a) VEGETABLES AND FRUIT

The edible yield of perishable foodstuffs determines its ultimate cost. There is little point in buying an article at a low price if the yield is so poor that it compares unfavourably with a dearer article providing a greater edible proportion.

When buying fresh foodstuffs this inedible amount must be taken into account. Unfortunately, it is not always possible to see the goods before buying, in which case personal attention must be given frequently to their condition on delivery. Recorded tests of trimmed yields of vegetables and fruit will provide useful information to the buyer when dealing with suppliers, and strengthen his bargaining power. At the same time this recorded information will enable the buyer to decide at what time new season goods can be purchased economically.

Selection will depend on the buyer's knowledge of quality, price and availability, and the importance is stressed of choosing the grade most suited for the purpose intended.

Because of their perishable nature, vegetables and fruit should be obtained frequently, daily if possible, and it should be remembered that large stocks will spoil.

The following guide to purchasing may prove of assistance to those whose aim is to buy the best produce obtainable.

VEGETABLES

BEETROOT.—Should be smooth, firm and tender.

BEANS, BROAD.—Pods should be well filled. Beans should be plump and firm, but not dry.

BEANS, FRENCH.—Are best when small. Should be tender, stringless and snap easily when broken.

BEANS, RUNNER.—Should be of medium size and tender.

BRUSSELS SPROUTS.—Avoid those with limp or discoloured leaves, which indicate staleness. Heads should be hard and compact, of fresh green colour and free from insects and decay. Should retain a good colour after cooking.

CABBAGE.—Heads should be solid, firm with crisp leaves and free from discolouration. Spring greens are more expensive, but have a greater edible yield. Savoys have a crimped leaf and pale heart, with a more delicate flavour.

CARROTS.—Should be firm, fairly smooth, tender and of good colour.

CAULIFLOWER.—Heads should be white and compact, and care should be taken to see that the leaves are crisp.

CELERY.—Stalks should be tender, crisp and free from cracks and decay. Colour should be white or light green.

CUCUMBERS.—Should be firm, regular in shape and slice cleanly.

LETTUCE.—Should be crisp, fresh and free from blemish. Avoid those with tough, leathery leaves.

LEEKS.—Should be large, firm, clean and white.

ONIONS.—Shape and colour depends on variety—should be mature, uniform in size and free from disease or rot.

PARSNIPS.—Medium size are preferable as large roots usually have woody cores. Should be firm, smooth and regular in shape.

PEAS.—Pods should be firm and well filled. Peas should be medium size and tender.

POTATOES.—Should have shallow "eye" and no sprouts. Select smooth, firm potatoes free from blemishes such as green colour on skin.

RADISHES.—Should be well formed, firm and tender.

SWEDES.—Should be smooth, firm and free from blemish.

SPINACH.—All kinds should be crisp and rich green in colour.

TOMATOES.—Should be mature, not over-ripe, smooth, firm and fleshy.

TURNIPS.—Should be firm and fairly smooth, and free from cracks and decay.

VEGETABLE MARROW.—Small or medium size are best, since large marrows become dry and tough.

WATERCRESS.—Should have bright green leaves and crisp stems.

FRUIT

APPLES.—Should be matured, well formed, with no damage from insects. Colour and shape characteristic of variety.

APRICOTS.—Highly perishable—should be firm and orange in colour.

GRAPEFRUIT.—Should be thin-skinned, firm but springy to touch. Thick-skinned spongy fruit usually has little juice

GRAPES.—Should be plump, fresh and firmly attached to stems.

LEMONS.—Should be firm (not hard) and thin-skinned.

ORANGES.—Avoid spongy oranges. Should be firm, hard, with fairly smooth skin.

PLUMS.—Should be firm and plump—colour according to variety.

PEACHES.—Should be firm, ripe and free from blemish.

PEARS.—Should be firm (not hard) and mature.

RHUBARB.—Deteriorates quickly—order as needed.

BLACKBERRIES, CHERRIES, CURRANTS, DAMSONS, GOOSEBERRIES, RASPBERRIES and STRAWBERRIES, etc., are highly perishable and should be ordered only as required.

TABLE OF AVERAGE EDIBLE YIELDS.

VEGETABLES AND FRUIT.

	%		%
Beans, Broad	50	Lettuce, Round	60
Beans, French	90	Lettuce, Cos	70
Beans, Runner	90	Marrow, Small	60
Beetroot, New	80	Marrow, Large	70
Beetroot, Old	85	Mushrooms	85
Broccoli	85	Onions	90
Brussels Sprouts	70	Parsley	55
Cabbage, Spring	90	Parsnips	90
Cabbage, Summer	80	Peas, Early	30
Cabbage, Autumn	80	Peas, Main Crop	40
Cabbage, Winter	75	Potatoes, New	90
Carrots, New	75	Potatoes, Old	80
Carrots, Old	85	Spinach	75
Cauliflower	65	Swedes	70
Celery	45	Tomatoes	90
Cucumbers	75	Turnips	70
Apples	75	Rhubarb	68
Blackcurrants	88	Redcurrants	88
Cherries	75	Strawberries	90
Gooseberries	88		

(b) **MEAT**

The method of buying meat will depend upon the amount of the permit and the facilities available at a Hospital or Group of Hospitals. Whatever the ruling factors may be, the regrettable tendency to "leave it to the supplier" should be avoided. The supplier can only sell what is available, but obviously his business instincts will be aroused and his desire to satisfy will be increased if his customers display interest in the commodity which ensures his livelihood. Meat in carcase form not only affords a more varied selection of cuts to the consumer, but provides a greater weight for the monetary value than does meat bought in joints. Nevertheless, this clear advantage is frequently ignored by large hospitals where facilities and staff exist to butcher meat on the premises. Why is this? The reasons vary. Quite often it is because the buyer mistrusts his knowledge of butchery and his ability to select joints for their specified purpose, or because he finds it simpler to order "meat for roasting or stewing."

When it is not practicable to buy in carcase, attention should be given to the joints supplied. It is not sound buying to purchase a preponderance of prime roasting joints when this will result in fewer meat dishes on the menu. It is the duty of the buyer to obtain the best possible value in quantity for the permit.

The following points connected with good quality meat are worth bearing in mind, even though in present conditions of supply they may indicate an ideal not always attainable:—

MEAT

BEEF

(a) Good quality meat should be bright red, smooth, firm to the touch, flecked with fat. Muscular fat ("marbling") should be plentiful, and grain (texture) fine. Cut surfaces should be moist (not wet). Older and inferior meat appears darker and coarser.

(b) Fat should be firm and odourless and creamy white in appearance. Deep yellow fat is characteristic of older or dairy animals.

(c) Bone will vary with age from pink (young beef) to grey-white in older animals, and should smell clean, not musty.

MUTTON

(a) Flesh should be firm, dark red in colour, of fine grain.
(b) Fat should be hard, brittle, white and odourless.
(c) Bones generally pink in colour, but grow white and harder with age.

LAMB

(a) Flesh should be firm, light red and fine-grained.
(b) Fat should be firm and white.
(c) Bones should be fairly soft and pink in colour.

VEAL

(a) Flesh should be light pink, firm and smooth and fine-grained. Cut surfaces should be moist (not wet).
(b) Flesh should be clear, firm and white in colour.
(c) Bones should be flexible and pinkish-white in colour.

PORK

(a) Flesh should be light pink in colour, smooth, fine-grained and springy. Cut surfaces should appear moist (not wet). Darker shades of pink indicate an older animal.

(b) Fat should be white, smooth and firm.

(c) Bones generally soft and pink in colour, but grow whiter and harder with age.

All carcase meat should bear a stamp or tab indicating quality and grading.

(c) **FISH**

Fish should be bought fresh daily, and it is well to examine all fish purchased, even from the most reliable supplier. Points to remember when buying fish are:—

(1) The eyes should be clear and full (not sunken).
(2) Gills should be bright red.
(3) Flesh should be firm and resilient.
(4) Scales should adhere to the skin.
(5) Skin should be bright with little slime.
(6) The smell should be fresh and salty.

Special attention should be given to mackerel. It deteriorates rapidly, and unless very fresh (i.e., not limp) can cause illness.

While it can be said that frozen fish retains most of the characteristics of fresh fish, there are disadvantages. Freezing can produce a poor appearance and flavour and a smell of ammonia. Prolonged storage can cause the fish to become spongy, with a resultant loss of weight. Much depends on the temperature and manner in which the fish is frozen, as well as the thawing and preparation.

The buying of fish direct from the coast can sometimes prove disadvantageous. Overheads may be involved through telegrams and telephone calls, and the cost of transport and delivery and container recovery should not be overlooked. Long-range buying precludes the possibility of examination before purchase, and with irregularity of supplies there is the possibility of fish being substituted which are not required.

(d) **CHICKENS**

Generally speaking, chickens are divided into roasting and boiling fowls, and the following characteristics should be sought when buying chickens:—

(1) Flesh should be firm.
(2) Fat should be enough to make the bird plump but not heavy.
(3) Breast-bone should be straight and unbroken.
(4) Skin should be free from tears, abrasions and blemishes.

Since chickens are often sold from cold storage, the appearance cannot always determine its freshness. However, a bird with a "gamey" smell tells its own tale, and should be avoided.

Poultry is calculated to lose 25% by raw weight when drawn and a further 25% when cooked.

(e) **MILK**

Large quantities of milk are used in hospitals, and because of its vulnerability to dangerous bacteria it is important to buy adequately heat-treated milk in the manner best suited to the purpose for which it is required.

For consumption by patients it is advisable to buy milk in bottles. Apart from its hygienic advantage, bottled milk provides the buyer with a more accurate method of ordering and supply. Bottles can more easily be stored in the ward kitchen refrigerators, and ensure protection from contamination. The extra cost is relatively small, when compared with these important factors, and is more than compensated by the reduction of waste due to spoiling or careless handling. The use of bottled milk will eliminate the need for a sterilisation plant for containers with a consequent saving in overhead expenses.

Bulk milk should be purchased for kitchens and dining rooms, since larger quantities are used there at a given time.

(f) **BREAD**

This staple item of diet is least regarded as a contributor to waste because of its low price. It is true that stale bread can be used to certain advantage in cooking, but its full value has been lost unless it is consumed directly. Bread quickly becomes stale when exposed to the air, and whether sliced bread is served, or a loaf provided from which slices can be cut, a surprisingly large quantity is left uneaten, and a corresponding proportion wasted.

Wrapped bread has certain advantages, apart from the obvious hygienic ones. Provided it is not removed from the wrapper too soon, it stays fresher and consequently is more palatable. Sliced, wrapped bread also has its advantages, in that the number of slices to the loaf are known and the buyer can thus purchase more accurately the quantity required.

(g) **GROCERIES**

No hard and fast rules can be laid down in the purchasing of groceries. An experienced buyer will know when and how much to buy. But he is always well advised to sample a product before placing the order. Quality comes before price, although it must not be assumed that the dearest article should always be bought. The taste of the average consumer must be taken into account, and, of course, the price cannot totally be disregarded.

While it may be assumed that due care is given to quality and price, experience shows that there is frequently a failure by buyers to purchase commodities in sizes and packs suitable to circumstances. For example, jam may be bought in 1 lb. jars only, when demand is for 7 lb. tins; tinned fruit or vegetables may be bought in A.10 size, when so little is used at one time that an A.2½ size tin would be sufficient. The result is half-opened tins and jars which go "off" and have to be destroyed, with consequent waste of time, material and money.

The buying of substitutes, such as cake and pudding mixtures, tinned and powdered soups, junket and jelly compounds, should be avoided. These products implement the sugar and fat ration it is true, but the good caterer can manage without them, and they constitute a needless expense.

(h) **ICE-CREAM**

Several brands of good ice-cream are marketed today at very little difference in price. The buyer is protected to a certain degree by the Food Laws governing the quality of ice-cream, although he is well advised to deal with a reputable firm. The point to be decided is how to buy. Bulk ice-cream is cheaper, but the loss in serving can prove wasteful. Ice-cream packed in brickettes and tubs when served with fruit salad, etc., presents an unappetising appearance, but in the form of "Family Bricks" it can be issued direct to wards and dining rooms in good condition; portions can be cut according to individual requirements on the spot with no waste and the consumer receives a palatable and attractive portion.

Since in hospitals the purchase of food is not always the only responsibility of the buyer, it follows that his attention cannot be given permanently to this important function. It is suggested that his knowledge should be kept up-to-date through the medium of trade papers and contact with representatives of firms with a view to ensuring that goods purchased are of the best quality compatible with an economic price. If a steady turnover of materials is maintained there will be a minimum risk of spoiling or waste, and overstocking on any items will also be avoided.

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2. CHECKING OF DELIVERIES

The necessity for carefully checking provisions delivered to the Catering Department would appear to be obvious, but this elementary principle is not always observed. Many instances have been noted of supplies left at a goods entrance without anyone appearing to check the delivery. Those who defend this practice by vouching

for the suppliers' integrity are best answered by pointing out that the tradesmen's honesty may not be in doubt, but that mistakes can occur at any time and that since materials are money in another form they should be treated as hard cash. Deliveries of poor quality or short-weight foodstuffs represent a loss as much as where cash is involved.

The storekeeper, or other authorised person, should ensure that every delivery is scrupulously checked for weight, number, size and description. To carry out this important function, he will need a scale large enough to meet the demands of the heaviest weighted delivery. On large orders a case should be opened and the contents examined, and sacks of cereals should be examined for traces of weevil or other spoiling. Selected churns of milk should be measured. At all times full details must be checked against the tradesman's Delivery Note, and the actual quantities, together with description, entered in the Goods Received book. It is not enough to state, e.g., ten cases of Carrots or five bags of Cabbage, when the actual amount is 10 x 24 of A.2½ tins Diced Carrots or 5 x 35 lbs. Spring Greens.

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3. STORAGE

Waste due to unsatisfactory storage is often overlooked, and sometimes tolerated because of insufficient space or the lack of necessary funds to improve or extend existing store rooms.

Whatever the reason, inadequate storage facilities produce an inevitable deterioration in the condition of the food, resulting in a poorer standard of diet and a waste of material.

Stores, which should be situated as near to the kitchen as possible, may be classified under five headings:—

(a) Dry Goods and Groceries.

(b) Vegetables and Fruit.

(c) Dairy Produce.

(d) Meat, Poultry and Fish.

(e) Edible "Left-overs" and Prepared Foods.

In all cases stores should be provided with adequate shelving, bins and racks. Walls and flooring should be in good condition to facilitate frequent and thorough cleaning.

The following elementary conditions are necessary for good storage:—

(a) DRY GOODS AND GROCERIES

The store should be dry and light with good ventilation. Sacks of flour, cereals, etc., if not in bins, should be stacked on end on racks clear of the floor to avoid damp and allow circulation of air. Goods such as tea are highly sensitive to odours and atmosphere, and if stored in packets should be kept well away from food such as strong cheeses. Unless sugar and salt are stored in a dry place they will cake and lump.

The temperature of the dry goods store should be between 50 degrees and 60 degrees F.

(b) VEGETABLES AND FRUIT

A cool dark store is best for garden produce. Sacks and boxes of greenstuffs should be kept off the floor. A suitable temperature for this store is from 40 degrees to 50 degrees F. If vegetables and fruit are bought in quantities necessitating long storage, they should be kept under refrigeration.

(c) DAIRY PRODUCE

The following storage temperatures may serve as a guide:— Butter and Eggs, 45 degrees to 50 degrees F.; Cheese and Bacon, 35 degrees to 40 degrees F.; Milk, 40 degrees to 45 degrees F. It should be remembered that butter and eggs readily absorb odours, so that they should be stored away from cheese. Fats should be stored in closed containers that exclude air and light in order to avoid rancidity. Where stocks are small or rapid turnover does not warrant separate refrigeration, the common cold room, or refrigerator, should be capable of being maintained at 40 degrees F.

(d) MEAT, POULTRY AND FISH

These articles must be kept in a cold room or refrigerator, the temperature of which should not exceed 40 degrees F. Because of its strong odour, fish should be kept in a separate cold box, and in the case of frozen fish, which is not to be used immediately, the temperature should be approximately 25 degrees F. It should be borne in mind that a refrigerator or cold room must be kept clean and regularly defrosted in order that the mechanism does not become overloaded, with consequent reduction in the efficiency of the refrigerator. In connection with tinned meat, it is worth remembering that if placed in a refrigerator several hours before use, the meat can more easily be sliced and less waste is incurred.

(e) EDIBLE "LEFT-OVERS" AND PREPARED FOODS

These articles should be stored in a refrigerator or cold room.

Bread and other bakery products should be ordered fresh daily.

Insect and vermin proofing is essential if waste is to be minimised, and, of course, the store should be kept locked when not in use.

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4. CARELESS PREPARATION AND COOKING OF FOOD

Kitchen waste, apart from permissible swill such as vegetable trimmings, etc., is frequently the fault of unskilled staff. A few instances, such as frying at low temperatures causing unnecessary absorption of fat, bad carving and trimming of meat, careless removal of cake and sponge from the baking sheet resulting in broken pieces, and lack of control over oven temperatures, all serve to indicate the necessity for vigilance by a skilled and observant Chef or Head Cook.

The quantity of food to be prepared and cooked should be governed by the numbers to be fed, thus avoiding unnecessary left-over food. Those responsible for the catering should be notified of the numbers of full, light or particular diets required in sufficient time to enable the correct quantities to be prepared and allocated; waste of food often occurs through neglect of this elementary principle.

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5. RECIPES

Inaccurate measurements of ingredients will often produce an inferior article, a good proportion of which, either from left-over helpings or consumer resistance, will find its way to the swill bin.

The use of recipes is most essential, if waste is to be reduced, and tested, approved and economical recipes should be available to all staff engaged in the preparation and cooking of food.

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6. FUEL AND EQUIPMENT

Waste of fuel or power cannot be attributed to the quality of the supply itself, but to the equipment in which it is used, and the degree of control exercised by the operator.

(i) EFFICIENCY OF EQUIPMENT

This is a subject which requires careful study if waste of fuel is to be checked, and is dependent upon the following:—

(a) MAINTENANCE

All equipment should be maintained in a state of thorough cleanliness, not only for vital reasons of hygiene, but in order to reduce waste of fuel or power and also to prevent undue deterioration in the equipment itself.

(b) GREASE

In cooking, heat is transferred from the heating medium to the actual cooking vessel, and the presence of a film of grease or other extraneous material acts as an insulator and impedes the flow of heat. Only by keeping all surfaces clean can the maximum transfer take place.

(c) BURNED-ON DEPOSITS

These act in a similar way to grease films, but when applied to gas burner orifices they are responsible for poor combustion, which results in unburned gases being liberated, therefore causing further waste.

(d) DUST

In electric motors, gas injectors and burners, dust can impede efficient operation.

(e) SCALE

When water boiling equipment is subjected to heavy deposits of scale, due to water hardness, this material acts as an insulator, and not only prevents maximum transfer of heat, but also causes damage to the actual equipment. It should be removed as frequently as it becomes noticeable.

(f) FROST

Refrigerators which are in constant use are subjected to heavy frost deposit on the cooling system. This acts as an insulator and impedes cooling of the compartment, with the result that compressors and motors are kept running for longer periods than is actually necessary to maintain the temperature of the compartment. Frost must never be allowed to accumulate.

(g) SOOT

The presence of soot reduces draught areas and so causes a loss of efficiency to the equipment.

(h) COMPONENTS

The control gear for all types of fuel-consuming equipment should be maintained at the highest possible standard,

especially such items as burners, elements, gas cocks, valves, switches, motors and thermostats. They should be regularly checked by qualified staff to ensure that they function correctly.

(i) Operation

Equipment should be operated only by staff instructed in its proper use.

(j) Suitability of Apparatus

All equipment is designed for a specific purpose and to operate within a certain capacity. If the capacity is exceeded, there is danger of the equipment breaking down; if it is used below capacity, then fuel may be wasted.

(k) Design

Actual efficiency is largely dependent on the design of the equipment and whether it is being used for the purpose for which it was intended.

(ii) **RUNNING COSTS**

The actual running costs of every item should be computed, and if the efficiency can be assessed it will be possible to calculate the amount of fuel that is wasted over a period. In the case of items of very low efficiency which cannot be improved, the amount actually wasted in fuel costs may warrant the purchase of new and more efficient equipment.

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7. TIME AND LABOUR

Waste of time and labour is a reflection on the organising capabilities of the catering department. Bad siting, inefficient maintenance and poor performance of equipment result in a waste of time and human energy. The siting and performance of equipment may be a "legacy," rendering unavoidable high running costs which can ill be afforded, but every effort should be made to provide an efficiently-equipped and planned kitchen which will eliminate waste of time and labour and so improve the catering.

This can be achieved if a master plan is prepared as a pattern for future developments, so that any alterations conform to a predetermined scheme of improvements. In practice, money is frequently spent on replacing a worn-out item of equipment without due regard to suitability in connection with capacity, design and location.

The expected output from staff can only be related to their capabilities, and labour is wasted unless personnel are carefully selected for suitable duties and disposed in such a way as to produce the maximum result with the minimum effort.

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8. SWILL

Finally and unavoidably we come to swill. Here is the graveyard of much wasted endeavour. Frequent and regular examination of swill bins will not only solve the mystery of the missing knives and forks, but provide a reliable indication of the standard of catering.

Swill cannot be entirely eliminated, but it should be treated with respect, recorded, and reasons for excess carefully checked. Including plate waste, vegetable trimmings and peelings, and other permissible kitchen waste, swill should not exceed an average of 8 ozs. per head daily, i.e., 50 lbs. per 100 persons.

These are the main sources of waste, and while all deserve thorough examination, it must be remembered that each is complementary to the other. The eradication of waste is a matter for careful co-ordination and cannot be consigned to inexperienced hands. It affords a fine opportunity to improve the standard of catering at no extra expense, for in tackling this vital problem with determination it will be found that improvements can be effected where previously a number of unconnected remedies provided only a palliative.

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