ICT based strategies to reduce food waste in hospital foodservice.

A case of Aalborg University hospital

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Introduction

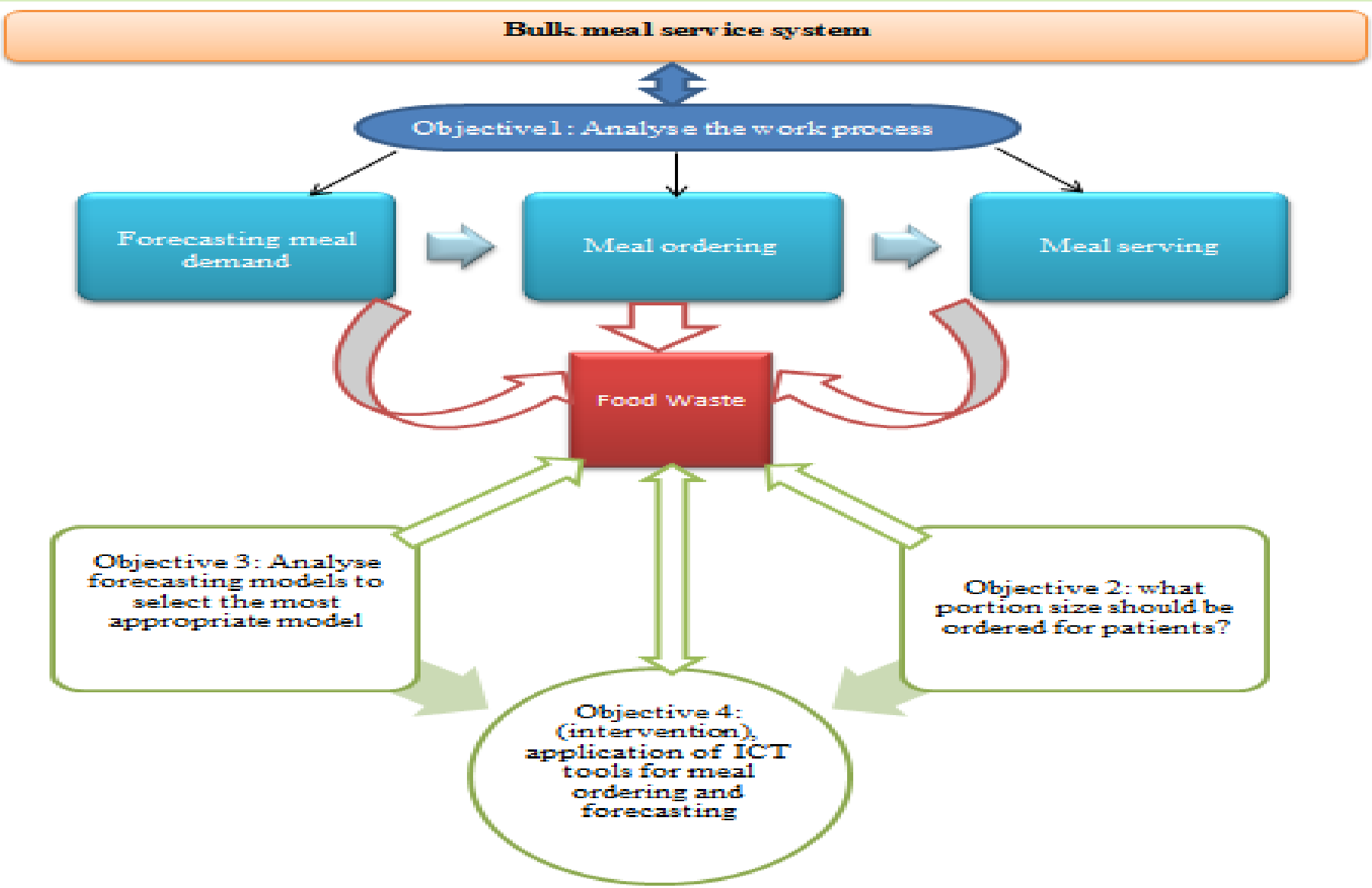
- Foodservice in hospitals is essential part of patient recovery.
- The foodservice operates as a coherent system to provide nutritious meals.
- Some of its subsystem are likely to generate waste due to methodological approaches.
- One of such subsystem is the meal service where food waste can be problematic.
- ICT based strategies can be applied in the hospital foodservice to improve patient meal service and reduce food waste.

Research Questions

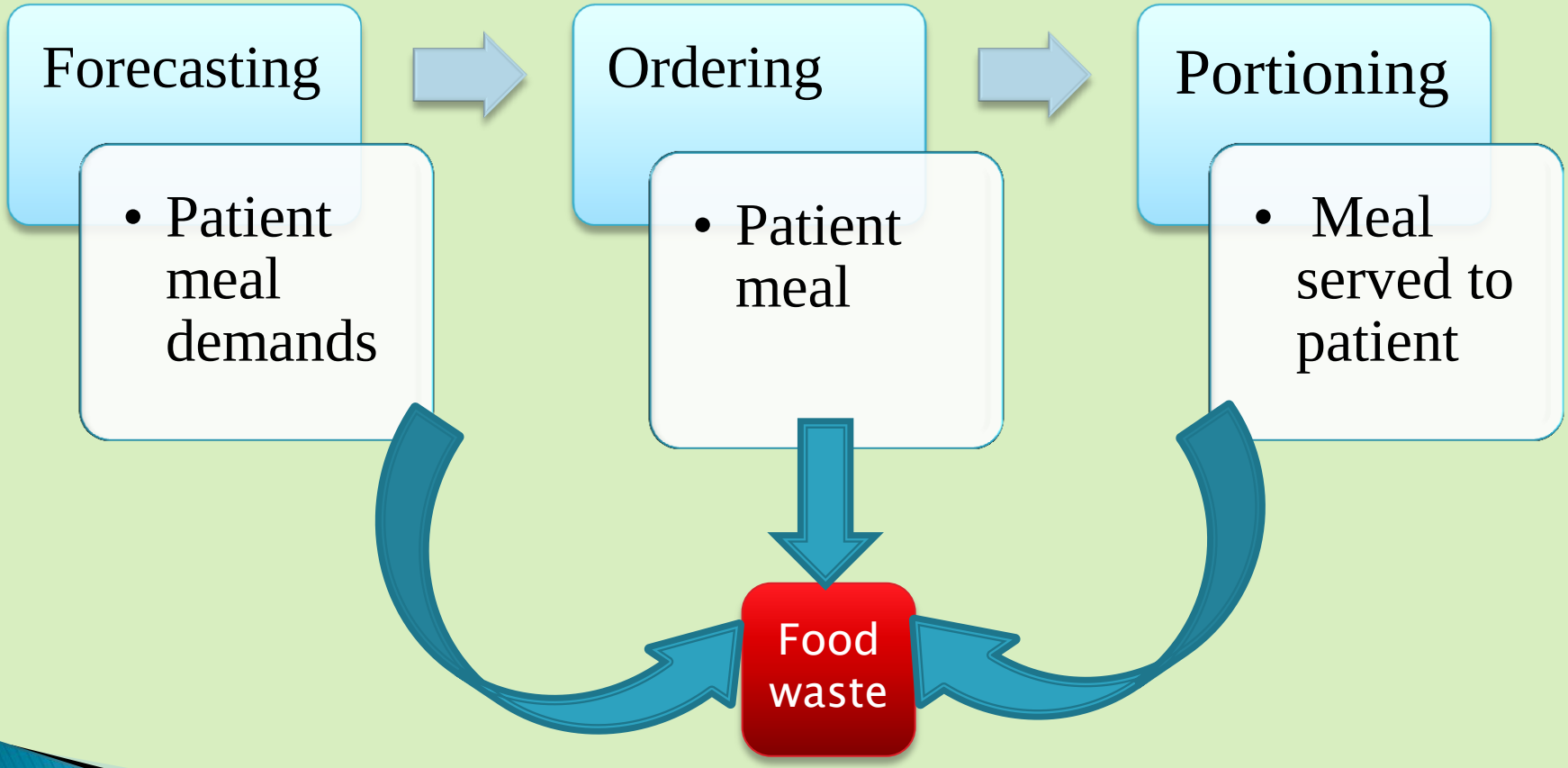
- Can food waste generated in the hospital food service be reduced?.

How can ICT based ordering and monitoring be applied in the meal service system to:

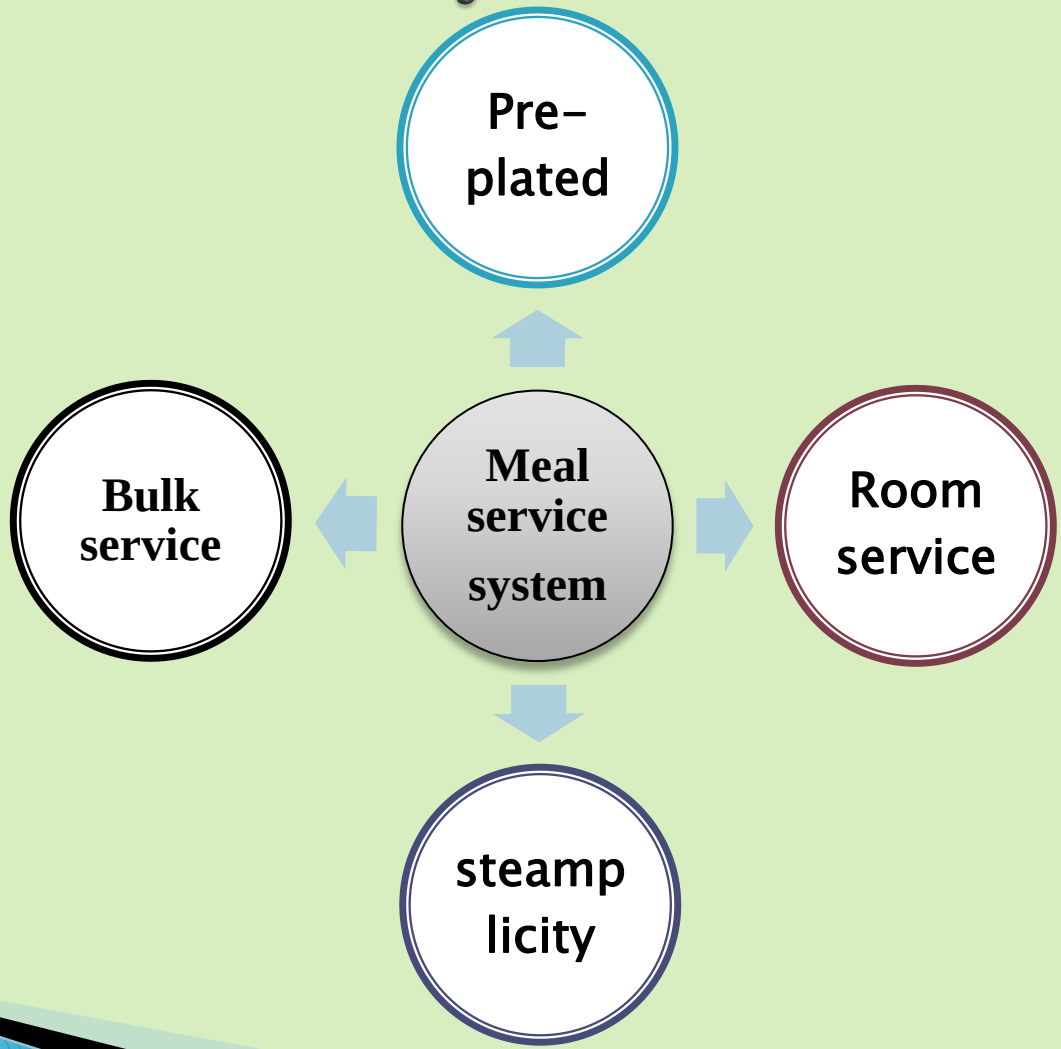
- *Order patient preferred portion size*
- *forecast patients food demand and*
- *reduce food waste on hospital ward?.*


Bulk meal service system
Objective1: Analyse the work process
Forecasting meal demand
Meal ordering
Meal serving
Food Waste
Objective 3: Analyse forecasting models to select the most appropriate model
Objective 2: what portion size should be ordered for patients?
Objective 4: (intervention), application of ICT tools for meal ordering and forecasting

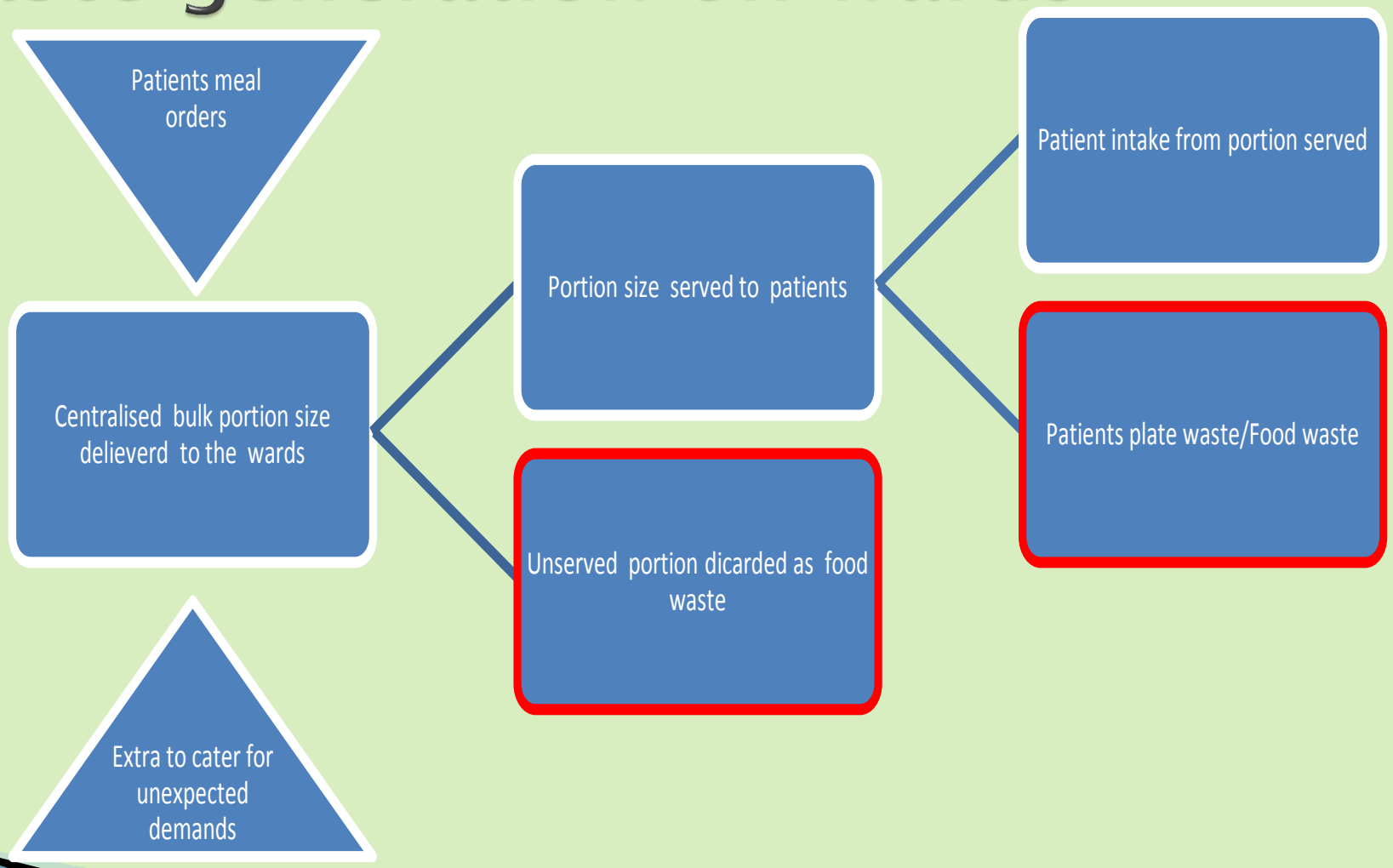
Meal service as a system on the ward level



Different meal services contribute differently to food waste



Bulk meal service and food waste generation on wards



Food waste from bulk & pre-plate meal services

Bulk system			Pre plate system	Authors
Trolley waste	Plate waste	Total		
38.7	11.8	50.5	49	UK Kelly 1999
29.9	27.78	57.68	35.28	*UK Edward & Nash 1999
	14.5		33.5	UK Wilson et al., 2000, 2001
	17+_5.9		65+_3.8	Marson et al 2002
20.5%	5.9	26.4	11.6	UK Hartwell & Edwards 2003
	21		48	DK Freil et al 2006

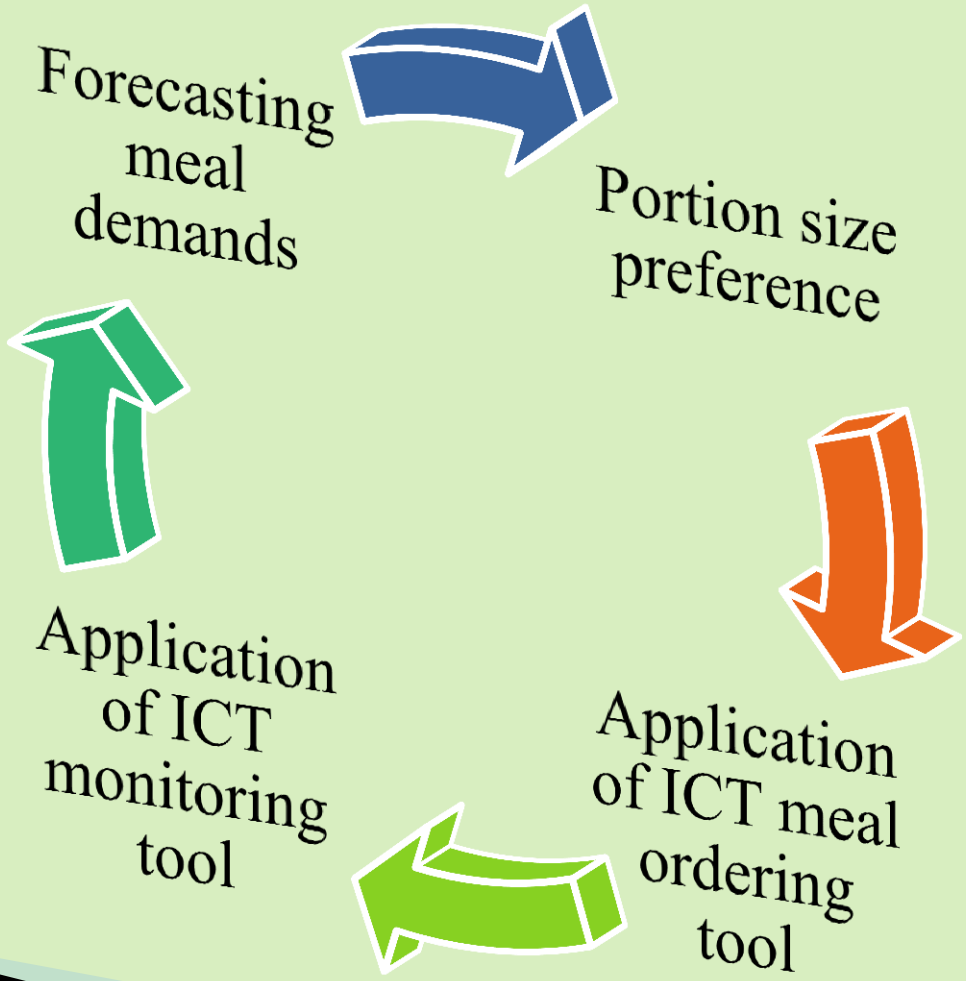
Why bulk meal service brings?

- Reduce plate waste
- Increase energy intake
- Increase protein intake
- Personalized portion size
- Improved patients satisfaction
- Enhanced Patient-staff communication

Challenges of bulk meal service

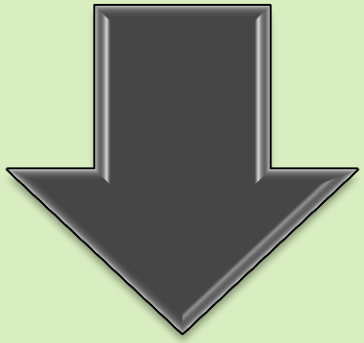
- Meal portion size- standardized portion size for bulk orders.
- Forecasting meal demands-Intuitive estimation error.
- Monitoring- patients food intake from bulk serving.
- Feedback- difficulty in providing feedback to the catering staff.

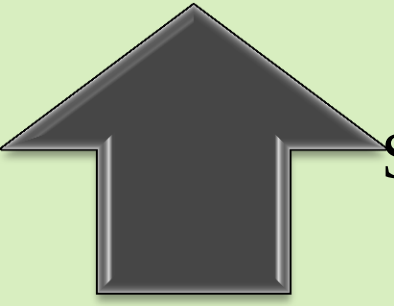
Addressing the challenges to minimize food waste



Portion size preference against Standard portion

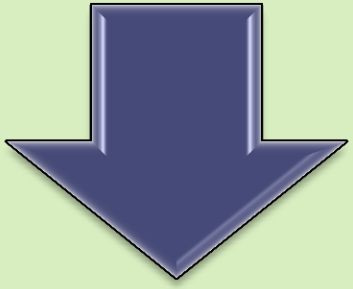
Standard portion ordered

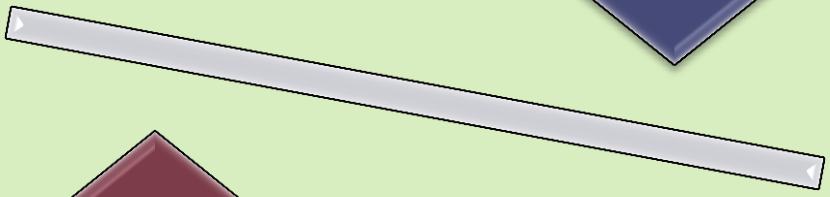


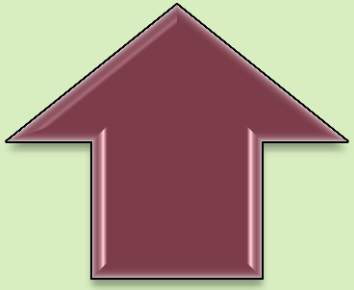


Standard portion served

Standard portion ordered







Preferred portion size served

Patients portion size preference for bulk meal ordering

Attitude towards portion size(PS)

Subjective norm to PS

Percieved control towards PS request

Intention to request PS

Past behavior of preferred PS

Actual behavior to PS request

ICT application in patient's meal ordering

Patient's profile

Hospital menu cycle

Patient's availability

Source of food products

Patient's portion size preference

ICT in application of intelligent monitoring tool

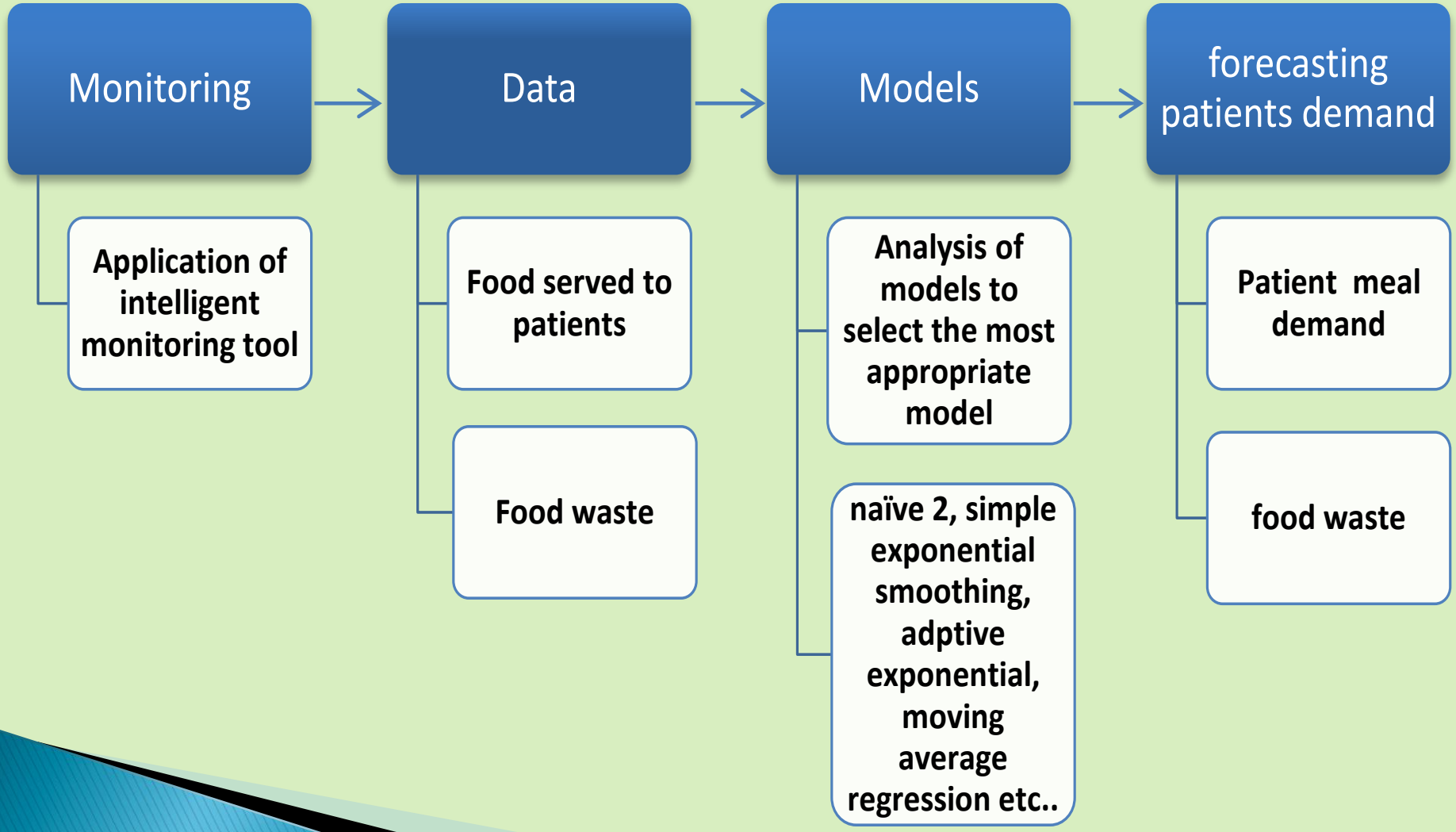
Real time monitoring and data collection

- Patient plate waste
- Portion Size
- Food Intake

Criteria for selecting best model to forecast patients meal demand

Historical Data - to be generated from the monitoring tool	• Portion size • Food intake • Plate waste
Model accuracy- choose best model	• Quantitative forecast vrs Qualitative (Intuition)
Model simplicity of computation	• Should be easy to use by foodservice staff

ICT applications in forecasting patients meal demand



Conclusion

Expected Outcome:

- Increase the accuracy of forecasting meal demands
- Reduction food wastage from bulk meal service
- Food intake-dietary assessment
- Food waste data
- Minimize work load related data collection and forecasting

Thanks for your attention!!!