

The International Dysphagia Diet Standardisation Initiative (IDDSI) framework: the Kempen pilot

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ABSTRACT

One of the most common treatments for dysphagia is the provision of texture-modified food and thickened liquids. To improve patient safety, a standardised terminology has been advocated. In 2015, the International Dysphagia Diet Standardisation Initiative (IDDSI) framework was released. The IDDSI framework describes texture-modified food and thickened liquids for individuals of all ages, in all care settings and in all cultures. To put the IDDSI framework into operation, a pilot site in Kempen, Germany volunteered to conduct a quality assurance process to document IDDSI implementation. The process commenced on the neurology ward, with findings to inform roll-out to other wards and eventually other hospitals. Through wide stakeholder involvement using simultaneous top-down and bottom-up approaches and agreed timelines, the Kempen Pilot achieved implementation at ward level. Practical training, incorporating the IDDSI framework into a range of communication channels and inter-professional collaboration were key to successful implementation.

Key Words Stroke rehabilitation, emotional wellbeing, nursing, culture of care

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The provision of texture-modified foods and thickened liquids is recognised in many countries as one of the most common treatment approaches for people with dysphagia (Cichero et al, 2013). Two systematic reviews of the literature have demonstrated that thickened liquids reduce aspiration risk, and flag that very thick liquids increase the risk of post-swallow residue (Steele et al, 2015; Newman et al, 2016). The Steele et al (2015) systematic review also demonstrated that thicker and harder food items require greater effort in oral processing and swallowing. Provision of hard or complex-textured food to people with

dysphagia has resulted in death (Berzlanovich et al, 1999; 2005; Food Safety Commission of Japan, 2010; New South Wales Ombudsman, 2015). For both liquids and food there are varying degrees of texture modification to meet these safety needs.

A number of countries have developed national terminologies to label and define levels of texture modification (American Dietetic Association, 2002; Atherton et al, 2007; Irish Association of Speech-Language Therapists and Irish Nutrition and Dietetic Institute, 2009; Food Safety Commission of Japan, 2010; Wendin et al, 2010; National Patient Safety Agency et al, 2011). The most salient benefit of standardised terminology for texture-modified foods and thickened liquids relates to improved patient safety from choking and aspiration, as discussed in detail elsewhere (American Dietetic Association, 2002; National Patient Safety Agency et al, 2011; Jukes et al, 2012; Cichero et al, 2013). The process of implementing standardised terminology has yielded further benefits of improved communication and collaboration between health professionals (Jukes et al, 2012).

In 2015, an International Dysphagia Diet Standardisation Initiative Framework (IDDSI), was developed by a multi-professional group and released following a rigorous process of reviewing existing national terminologies, a systematic review of research literature, and a survey of more than 5000 international stakeholders. The resulting IDDSI framework is suitable for use with individuals of all ages, in all care settings and all cultures. However, development of a framework is meaningless unless it is implemented as intended. In July 2015, Hospital zum Heiligen Geist, in Kempen, Germany, agreed to embark on a quality improvement project to be the premier pilot site to test the feasibility and implementation logistics of the IDDSI framework. The project became known as the 'Kempen Pilot' study.

The aims of the Kempen Pilot study were:

- To identify the functional logistic requirements of implementing the IDDSI framework and terminology
- To improve quality assurance practices and safety for dysphagia diets using the IDDSI framework and standardised terminology
- To identify and develop guidelines and/or resources to facilitate and inform future pilots and IDDSI framework implementation.

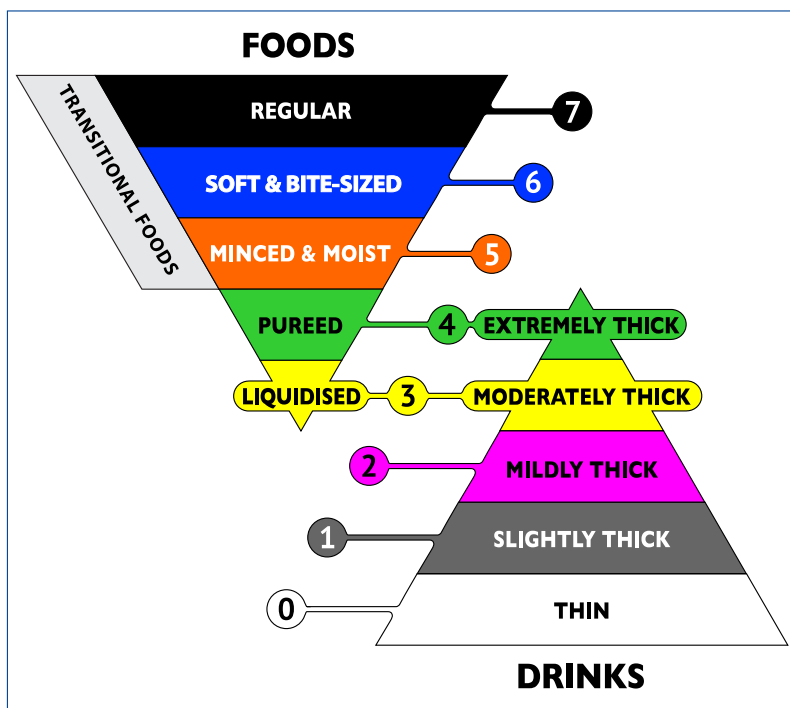


Figure 1. IDDSI framework indicators and descriptors

Methods

Hospital zum Heiligen Geist is a 250 bed hospital in Kempen, Germany. There is no existing German national terminology or standardised framework for texture-modified foods and thickened liquids. Consequently, hospitals and regions are free to use terminology for texture-modified foods and thickened liquids that best suit their individual or collective purposes. Hospital zum Heiligen Geist is one of 11 hospitals within the Artemed Group.

Preparation

Planning and preliminary steps for the implementation of IDDSI commenced in May 2015, led by the chief speech pathologist (SS) and the team lead speech pathologist (RZ). Over a period of 2 months, the speech pathologists provided nursing training around dysphagia screening and dysphagia pathway management, and this included the importance of diet standardisation. Concurrently, the chief speech pathologist shadowed the head chef for a day in the kitchen to understand more about kitchen processes. Terminology classification systems from Germany, the UK (National Patient Safety Agency et al, 2011) and IDDSI terminology (Cichero et al, 2016; IDDSI, 2017) were reviewed, with a decision to adopt the IDDSI terminology. With this step complete, a quality assurance study and pilot implementation project plan were presented to the Board of Hospital zum Heiligen Geist with institutional approval to proceed received in July 2015. The chief speech pathologist was appointed as the project lead and on-site liaison officer. A two prong implementation approach was adopted with the chief speech pathologist working 'top-down' (CEO to chef and kitchen), while the team lead speech pathologist worked 'bottom-up' with nursing, allied health and care staff at ward level.

Service evaluation

A review of existing services was determined as the first step and in July 2015 the IDDSI co-chair, a registered dietitian with concurrent food service expertise, conducted a review of current services and agreed to support the implementation process. In order to facilitate change management the project team determined that while the review of existing services would cover all food services, implementation would commence on one ward (Department C1 – a 22 bed neurology ward). Findings from the experience would be used to facilitate roll-out to other hospital wards, and finally to roll out to other hospitals within the Artemed group. The review covered food services, food production, meal tray assembly and delivery. Observations, interviews and discussions were conducted with the department medical consultant, speech and language therapists, dietitian, nursing staff, hospital executives, executive chef and food services staff to gather information about current operations and desired outcomes of the operational review. Sample dysphagia diet test trays were evaluated against existing hospital standards and IDDSI standards. The following clinical-to-food service interface areas were reviewed:

- Existing dysphagia diet and thickened liquid terminology, definitions, food/liquid lists and production guidelines
- System for ordering and delivering texture-modified foods and liquids
- Communication systems between the prescribing clinician and food services
- Physical production and assembly process of texture-modified foods and thickened liquids
- Quality assurance guidelines and/or tests in place for texture-modified foods and thickened liquids
- Evaluation of sample test trays against the IDDSI framework and descriptors

Following the review of existing services, there were recommendations made to enable implementation of the IDDSI framework. The IDDSI framework (Figure 1) and descriptors were translated into German. Reviews at 3 and 6 months post evaluation were recommended. Time frames, enablers and solutions to barriers were monitored as part of the review process.

Results

Operational review of existing services

Hospital zum Heiligen Geist has a longstanding functional diet order and food services system. There is an existing diet order for texture-modified foods, which shows four levels of modification:

- Pureed—*Phase I Passierte Kost*
- Soft—*Phase II Weiche Kost*
- Modified regular—*Phase III Adaptierte Kost*
- Regular—*Phase IV Vollkost*

Operationally, however, the kitchen only provides a 'soft' and a 'puree' diet. The soft diet is a modified version of the regular diet, where some of the harder-to-chew items have been removed after a discussion between tray line staff and

thet tray line controller. Pureed foods are commercially sourced (www.soft-meal.de) and thickened liquids are produced at hospital ward level by nursing staff. All patient dietary information (such as food texture requirements or food allergy/intolerance needs) is recorded on a master diet plan (*Essensplan*).

Following tray line production in the kitchen, meals are delivered to the ward by trolley. Nurses review meal trays and may request new meals from the kitchen if the tray was either not what was ordered or not what the patient should have. The executive chef estimates that 20 to 25 trays daily need to be re-plated due to incorrect orders, assembly issues, patients moving to a different ward or discharge from hospital. This results in a cost of approximately €1000 per month, based on meal costs of €4.50–6.50 per meal.

Looking specifically at Department C1 (neurology), with no standardised terminology for texture-modified food, dysphagia diets are ordered, assembled and delivered at the discretion of food services staff, the tray line controller, nursing staff and the head nurse. The patient capacity of the ward, the familiarity of staff with patients and the support of family/spouses allow some safeguards for delivery of appropriate therapeutic and texture-modified diets. In particular, the head nurse routinely conducts a final check on meal trays and removes any unsafe food items from the texture-modified meal tray before they are delivered to patients.

The audit of texture-modified meal trays using the current hospital system revealed some inconsistencies in the texture of food items provided. In some instances, items

such as cheesecake were included on a ‘puree’ diet tray. The meal delivery time frame was also found to be an important factor in final food texture. For example, a tray of texture-modified food had been delivered to a patient but was then left uncovered for over 10 minutes before consumption. The food had subsequently hardened, and without reheating was a potential choking risk.

Recommendations to enable implementation of the IDDSI framework

After reviewing the existing services, the following were recommended to enable implementation of the IDDSI framework: staff education, enhanced communication, review of existing menu items to determine which ones met IDDSI framework qualifiers, and adoption of the IDDSI colours, numbers and descriptions for all stages, from food service preparation to food service delivery. Implementation of the IDDSI framework in areas of key communication (such as patient whiteboards and meal tray cards) was promoted using IDDSI standardised labels, colours and numbers to help staff quickly identify patients who required texture-modified food and/or thickened liquids. Across the whole change management process, it was recommended that IDDSI education sessions be provided to nursing, therapy and food service staff. Collaboration and communication between food services and clinical staff were identified as key to successful implementation of the IDDSI framework and holistic adoption. Implementation reviews at 6 and 12 months were also recommended. Specific recommendations are shown in *Table 1*.

Table 1. Recommendations to assist IDDSI implementation and change management

Recommendation	Action	Factors affecting guideline implementation
Increase visibility of the IDDSI system	<ul style="list-style-type: none"> ■ Production of posters or photos of texture-modified food at each level of food texture modification that the hospital offered ■ Production of IDDSI colour/number sticker labels that could be applied to patient cardex, <i>Essensplan</i> and meal tray cards ■ Use of IDDSI colour/number on patient communication systems (e.g. ward white board) ■ Use of IDDSI terminology in medical chart notes 	Organisational support and practice system factors
Identify existing meals or liquids that do not need to change	<ul style="list-style-type: none"> ■ Use the IDDSI testing methods to evaluate all existing meals to identify meals or liquids that already meet the IDDSI standards for each level ■ Re-label using IDDSI labels, colours and numbers to help transition process 	Change process factors
Kitchen: operational organisation of tray line to support IDDSI framework	<ul style="list-style-type: none"> ■ Reorganisation and stocking of tray line stations and assembly of meal trays using IDDSI labels, colours and numbers 	Organisational, practice system and change process factors
Implement use of IDDSI flow test to check the thickness level of thickened liquids prepared on the ward	<ul style="list-style-type: none"> ■ Speech therapy and nursing staff to work together to conduct testing on thickened liquids made up on the ward using the IDDSI flow test 	Organisational, practice system and change process factors
Staff education	<ul style="list-style-type: none"> ■ Nursing, medical, allied health (therapy) and food services staff 	Individual factors
Opportunities for improved understanding and communication	<ul style="list-style-type: none"> ■ Ward staff (nursing, therapy) made aware of kitchen to understand tray line assembly ■ Kitchen and food service staff made aware of ward to see what food was like when presented to patient ■ Diet meetings between chief speech pathologist, dietitian and head chef 	Organisational factors, practice system factors and individual factors

Results of the pilot implementation trial

To enhance communication and staff education, the chief speech pathologist and team lead speech pathologist initiated a series of industry-supported workshops that were conducted over August and September 2015. One workshop provided training to nursing and ward staff and focused on thickening liquids to meet IDDSI standards. A second workshop provided nurses and ward staff the opportunity to match IDDSI descriptors to food staples, cultural food items and food commonly brought in by families. Each workshop had a hands-on practical component, with staff competencies recorded and signed off after each workshop. The third workshop had a maintenance role, reinforcing IDDSI classification of old terminology and the provision of education to new nursing staff. Throughout this time speech pathologists incorporated IDDSI terminology into reports and daily medical progress notes. The IDDSI classification was also incorporated onto the ward communication whiteboard that also contained information regarding patient bed numbers, diagnoses, mobility needs and daily patient movements. In October 2015, diet meetings were initiated with the chief speech pathologist, head chef and dietitian to receive feedback on implementation to that point. Weekly dysphagia update meetings were also initiated at ward level with nursing staff encouraged to identify patients requiring swallowing review and oral intake charts. Interviews revealed that, for clinical staff, a deeper understanding of processes in the food service kitchen allowed streamlining of procedures to improve patient safety. For food services staff, an understanding of what happened from when the tray left the kitchen until it arrived with the patient highlighted the key role of food services in ensuring that texture-modified foods were correctly and clearly labelled.

A flow chart summarising the steps taken to implement the IDDSI Framework is shown in *Figure 2*.

Trial suspension

A 12-month time frame was initially proposed for implementation, however, the timeline was extended when, in October 2015, Germany was inundated with more than 1 million refugees seeking asylum from conflict in Syria, Afghanistan, and Iraq (BBC News, 2016). At this time, hospitals in Germany prepared food for refugees in addition to supporting their patients, and the IDDSI pilot implementation study was suspended. The project resumed in January 2016.

Progress review

A 6-month review was completed in February 2016. The review highlighted key staff changes, including the impact of a new head chef and a new dietitian on the timing of uptake

of the IDDSI system. Meetings between the project officer, the charge nurse of C1 and the new head chef regarding implementation of a dysphagia diet system using the IDDSI framework occurred within the 6-month time period and a standardised identification scheme was developed. A whiteboard communication system was in place at the nursing and speech therapy office, using IDDSI levels to identify individual patients needing texture-modified diets and thickened liquids. The next step identified was the development of a system to communicate the diet and liquid prescriptions to food service orders. The new head chef undertook to develop a new menu, matching food texture to the IDDSI levels with the support of speech therapy staff. The new menus allow for clinical staff to connect the diet prescription information to the food service production, assembly and delivery systems. The card system that accompanied the *Essenplan* was reviewed to see if an existing Artemed corporate food service management software system could be adapted to include the IDDSI framework and descriptors. A new dietitian commenced work in September 2016 and was tasked with helping to lead IDDSI education and implementation and to be the liaison point between nursing and food services. A random audit of meal services indicated delays of 30 to 45 minutes between meals leaving the food service area and being presented to the patient. This delay will impact temperature, quality and texture behaviour of food. For thickened liquids, the IDDSI flow test had been adopted by the speech therapists when preparing thickened liquids for conducting assessments. This test uses two 10 ml slip-tip syringes with barrel length of 61.5mm. Correct syringe type is imperative for accurate results (Cichero et al, 2016). The user loads 10ml of the sample liquid into the empty syringe and stoppers the nozzle to impede flow. When ready, the stopper is released to allow flow for 10 seconds. The amount of liquid remaining after 10 seconds of flow is used to classify liquid thickness using the IDDSI framework detailed descriptors as follows:

- Level 0 (thin liquid): syringe completely empties within a total of 10 seconds
- Level 1 (slightly thick liquid): 1–4 ml remains
- Level 2 (mildly thick liquid): 4–8 ml remains
- Level 3 (moderately thick liquid): >8 ml remains.

Site visit

The IDDSI Committee visited the Hospital zum Heiligen Geist in April 2016. Nurses noted the importance of the colour system in helping them to quickly and easily identify food texture and liquid thickness needs for patients with dysphagia. Nurses started with labels and included the framework diagram as a reference beside the main communication board, but their familiarity with the IDDSI framework led them to predominantly use the colour

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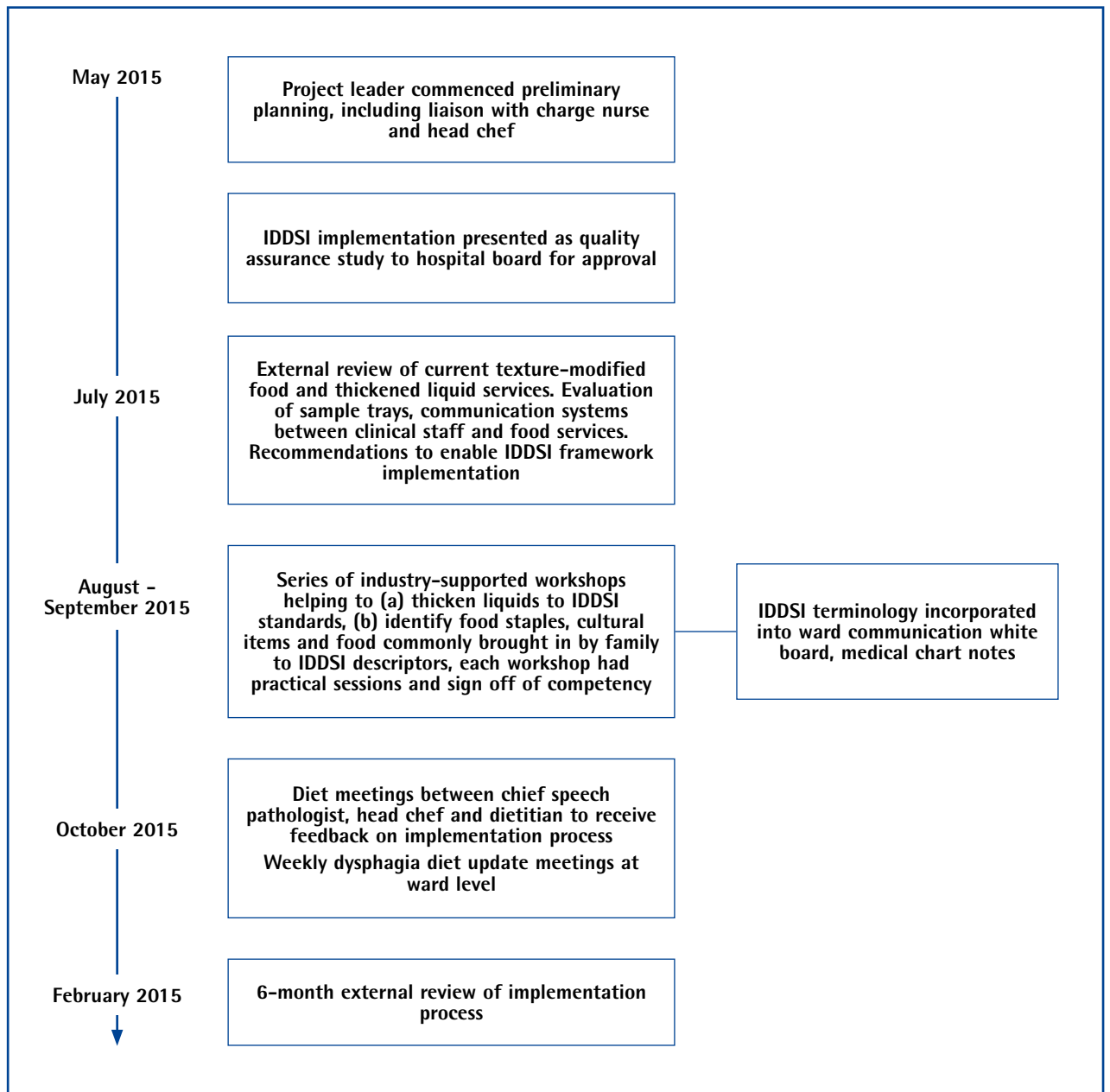


Figure 2. Steps taken to implement the IDDSI Framework

scheme at an operational level for quick communication. Medical and nursing staff reported that the intuitive nature of the IDDSI framework had helped promote acceptance of the framework on the ward. Plans exist to commence using IDDSI symbols at the bedside and to initiate family and carer workshops using IDDSI terminology for patients due for discharge.

Discussion

The Kempen Pilot presents as an excellent example of the use a range of strategies including organisational, practice, process and individual factors for effective guidelines implementation and change management. Within the space of 12 months, organisational support, together with collaboration and communication between key stakeholders, has resulted in fundamental steps being taken to implement

the IDDSI framework at Hospital zum Heiligen Geist. The dual-pronged 'top-down' and 'bottom-up' approach adopted in Kempen has been very successful.

Multi-professional collaboration

Despite a proliferation of guidelines and health-care innovations, the process of implementation of best practice is often difficult and poorly examined (Solberg, 2000; Grol and Grimshaw, 2003). Solberg (2000) notes that most research into the process of implementation focuses predominantly on the individual, with little appreciation of the role of the practice organisation or the systems change processes. The Kempen Pilot has demonstrated that clear organisational support provided an opportunity for change to occur. The enthusiasm of key champions including the head nurse, head chef, chief speech pathologist and team

lead speech pathologist allowed for collaboration across the patient care continuum from kitchen to bedside. Jukes et al (2012) reported that one of the key benefits of implementing standardised terminology in Australia was multi-professional collaboration, in that instance most often between speech pathologists and dietitians. Multi-professional collaboration is also advocated by Grol and Grimshaw (2003). The Kempen Pilot, however, is the first to increase the multi-professional circle outside of the health-care team to include the food service team. Through this multi-professional collaboration, food service staff became more aware of their important role in providing safety from choking and clinical staff became more aware of the complexities and time pressures in plating meals in the kitchen. This serves to emphasise a point made by Grol and Grimshaw (2003), who wrote in relation to compliance with hand washing, that people become motivated to change when they experience a problem in practice, which then becomes the catalyst to change. It is logical that the entire continuum and staff from food service to bedside be included in implementation of the IDDSI framework.

Environmental factors

The Kempen Pilot also highlights the importance of identifying environmental factors that can assist with implementation. The use of IDDSI stickers in key communication areas such as the *Essenplan*, the patient cardex and meal trays, in addition to the ward-level communication whiteboard and medical notes, are some examples. At the 6-month review, the hospital also identified corporate Food Service Management software, owned by their parent group Artemed, that could be adjusted to include the IDDSI framework. Further to this, there are other opportunities to use computers and software systems to help assist change management. For example, it has been found that the use of computer reminders has had the largest average effect of all interventions for transfer of evidence into practice (Grimshaw et al, 2002). Computer-assisted decision support software, using simple prompting, has also been identified as another effective strategy for uptake of change (Grol and Grimshaw, 2003). If put into operation for IDDSI, this may mean software that is capable of providing a pop-up message when a diet is coded, showing the current name of the food or drink and the new IDDSI name.

Individual engagement

Support for change management at the level of the individual is also very important (Jukes et al, 2012). However it is the manner in which individuals are engaged that provides the best change management opportunities and chance of success. Provision of passive education materials and even conference presentations with motivating continuing professional development (CPD) points have provided mixed results for stimulation of uptake of new practices (Grol and Grimshaw, 2003). However, small interactive group discussions and interactive engagement of individuals repeatedly shows positive effects for change

management (Solberg, 2000; Wansink, 2002; Grol and Grimshaw, 2003). The success of these types of small group interactive practices and practical hands-on workshops has been ably demonstrated in the Kempen Pilot.

Organisational factors

The role of the organisation in providing support for change is identified by a number of authors (Solberg 2000, Grol and Grimshaw, 2002; Jukes et al, 2012). The Kempen Pilot has the full support of the not only the hospital, but also the corporate group to which it belongs. The catalyst for organisational support was initially financial, with re-plating errors costing €1000 per month. Although no critical patient safety incidents (such as choking) were identified by the hospital, the same cannot be said of other institutions (New South Wales Ombudsman, 2015). The introduction of IDDSI, an international standardised terminology framework, helps to reduce the risk of death by accidental choking by addressing errors of incorrectly supplied meals. This offers the organisation a benefit in reduced liability.

Another benefit of corporate support found in the Kempen trial is the opportunity to introduce the IDDSI framework progressively, first in one ward, then expanding to other wards before going hospital-wide and finally group-wide. This type of approach allows for key systems to be established and problem-solving to occur, providing a smoother transition and roll-out process overall. Similar approaches were also used effectively in the development and implementation of the RBWH Nurse Screening Tool for Dysphagia (Cichero et al, 2009).

Wider applicability

Although this study reports on the implementation of the IDDSI framework in a hospital that did not have a national standardised terminology for texture-modified food and thickened liquids, there are findings from the Kempen Pilot that can be applied to countries that do have their own national standards. Facilities with existing standards may be able to progress faster and use existing diet software packages and pop-up reminders to help their staff transition to the new IDDSI framework. The Kempen Pilot has demonstrated that significant change is possible within a 6 to 12-month period. The development of a plan and timeline for change is clearly important. Changes were able to be effected despite global unrest and the need for the hospital to assume humanitarian duties in the care of refugees. While these external factors may have delayed the timeline, the energy and the drive for implementation of the new IDDSI framework remained.

Conclusions

The Kempen Pilot has demonstrated successful implementation of the IDDSI framework through a cohesive collaborative kitchen to ward interface approach. A combination of organisational support, in addition to collaborative work from key stakeholders spanning food service, medicine, nursing, speech pathology and dietetics, was important to success of the implementation process.

Key points

- The International Dysphagia Diet Standardisation Initiative (IDDSI) framework provides a common standardised terminology and definitions for texture-modified foods and thickened liquids to improve patient safety and care for individuals with dysphagia
- The Kempen Pilot (Germany) demonstrated that a top-down, bottom-up approach, where organisational support is reinforced by local multi-disciplinary champions, allowed for progressive introduction of the IDDSI framework within 6 months
- Collaboration from kitchen to ward interface demonstrated the essential role of food service staff together with medical, nursing, speech pathology and dietitian support in implementation of the IDDSI framework
- Practical interactive engagement workshops and regular discussions provided the opportunity for smooth transition to the IDDSI framework
- Clear goal setting and timelines allowed for progressive implementation to begin within 6 months of the decision to adopt the IDDSI framework

Practical workshops and set milestones for review further assisted the successful implementation process. It is the hope of the IDDSI that the standardised framework and definitions will help not only Hospital zum Heiligen Geist, but also other sites around the world to improve patient safety and quality of care. At the time of writing further pilot sites had commenced in the UK, Canada and the USA.

Declaration of interest: The authors and IDDSI have no conflicts of interest to declare

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CPD reflective questions

- Why is a single international terminology for dysphagia diets and liquids (IDDSI framework) imperative for patient safety?
- Why is it essential that food service staff as well as medical, nursing, speech pathology and dietetic staff be involved in change-management processes relating to diet and drinks for people with dysphagia?
- Why are practical and interactive sessions more effective for change management than conference presentations and passive education materials?