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TITLE PAGE

Article Title

A modified Delphi study of structures and processes related to medicines management for elderly hospitalised patients in the United Arab Emirates

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Keywords: Delphi technique; medicines management; health professional; United Arab Emirates; structures and processes

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ABSTRACT

Rationale and Aim

The structures and processes around the management of medicines for elderly, hospitalised patients are ill defined. This study aimed to determine consensus related to strategic and operational approaches in the Unites Arab Emirates.

Methods

A modified Delphi technique, consensus study with first round statements developed from systematic reviews related to medicines management. Normalization Process Theory and the Theoretical Domains Framework were applied in the construction of statements, organised into key elements of medicines management: guidelines for medicines management; medicines reconciliation; medicines selection, prescribing and review; medicines adherence; medicines counselling; health professional training; and evaluation research. 70% (summative agree and strongly agree) was set as the target for consensus. Thirty panellists were recruited representing: senior physicians working within geriatrics; hospital pharmacy and nursing directors; chief health professionals (including social workers) and policy makers within the Health Authority of Abu Dhabi; and academics.

Results

A high level of consensus was obtained for most statements relating to the structures and processes of medicines management. While consensus was not achieved for targeting only those patients with medicines related issues, it was achieved for focusing on all elderly admissions. Similarly, consensus was not achieved for which professions were most suited to roles, but was achieved for trained and competent staff.

Conclusions

High levels of consensus were obtained for structures and processes of medicines management relating to elderly hospitalised patients. Trained and competent health professionals were preferred to specific professions for any tasks and that all elderly patients and not targeted patients should be the focus for medicines management.

INTRODUCTION

Donabedian proposed a conceptual framework for health services and quality of care, describing elements of structures, processes and outcomes, which could be applied in all healthcare settings and at all levels.[1] Structures are the characteristics of the care setting, including: attributes of material resources (e.g. facilities, equipment); human resources (e.g. number of qualified personnel) and of organisational structure (e.g. methods of peer review, methods of reimbursement). Processes detail what is carried out as part of giving care (e.g. practitioner's activities in making a diagnosis, recommending treatment, or other interactions with the patients). Outcomes attempt to describe the patients' resultant status of health.

Elderly patients (defined commonly as those aged 65 years and over) are at particular risk of medicines related issues occurring throughout the hospital journey from admission to discharge. These issues may be due, in part, to inappropriate polypharmacy (prescribing of many medicines which are either inappropriate or no longer indicated).[2] This is considered to be 'one of the greatest prescribing challenges', increasing the likelihood of adverse drug reactions and drug interactions, complicating patient monitoring and contributing to patient non-adherence.[3] Data from the United Kingdom (UK) highlight that on fifth of patients with two clinical conditions were receiving four to nine medicines, and one tenth receiving ten or more medicines. These figures increased to around half in those with six or more comorbidities.[4] Related UK data stress the issue of medicines related adverse effects, contributing to over 1.5 million extra hospital bed-days annually.[5] Non-adherence to prescribed medicines is a major issue, with research suggesting that between half and three quarters of those patients with chronic conditions may be non-adherent.[6] Medicines related issues in the elderly may occur during process of medicines reconciliation at admission, prescribing and monitoring during stay, medicines counselling and information transfer at discharge. It is therefore important that the structures and processes of medicines management are clearly described to optimise patient outcomes. While there is no globally accepted

definition of the term ‘medicines management’, one of the most commonly cited is that of the United Kingdom Audit Commission, encompassing ‘the entire way that medicines are selected, procured, delivered, prescribed, administered and reviewed to optimise the contribution that medicines make to producing informed and desired outcomes of patient care’.[7] Several systematic reviews provide evidence to guide some of the processes related to medicines management, relating to medicines reconciliation,[8,9] tools to identify inappropriate prescribing and high risk drugs,[10] and medicines adherence, [11] however none cover the full spectrum of activities during the patient journey and several have highlighted the paucity and general poor quality of the literature and the lack of translation of evidence into practice.

The United Arab Emirates (UAE) comprises seven emirates: Abu Dhabi, Dubai, Ajman, Fujairah, Sharjah, Ras al-Khaimah, and Umm al-Qaywayn. The UAE vision 2021 states that hospitals will be accredited to ‘clear national and international quality standards of medical services and staff’.[12] Healthcare is planned, delivered and regulated through three geographical zones: the southern zone comprising Abu Dhabi with The Health Authority of Abu Dhabi (HAAD) as the regulatory body; the central zone of Dubai, under the auspices of the Dubai Health Authority; and the north Emirates or the northern zone under the Ministry of Health. There are no guidelines for medicines management of elderly hospitalised patients (or any other patient group) and qualitative interviews with health professionals identified a need for a more structured approach.[13]

The primary aim of this phase of the research was to determine consensus of an expert panel in relation to strategic and operational approaches around medicines management for elderly, hospitalised patients in the UAE. The secondary aim was to determine panellists’ views on the use of the consensus method.

METHODS

Research design

A consensus based, quantitative approach was employed with the overall aim of generating consensus among the participants. The three main approaches are the Delphi technique, the Nominal Group technique and the Consensus Development technique.[14-

16] Essentially, consensus methods utilize a group of experts in a particular field to gather evidence.[17] These approaches are particularly suited to the development of professional norms and areas of practice where published evidence is lacking. In these situations, there will undoubtedly be potential for diverse personal and subjective opinions that need to be considered. Consensus methods attempt to systematically and objectively gather, organise and synthesise this diversity in an attempt to provide a single consensus.

The modified Delphi technique

A modified Delphi technique was selected for this study for several reasons. Unlike the other approaches, it avoids the need for face to face meetings which can be difficult to organise, particularly over large geographical areas such as the UAE. Furthermore, the Delphi technique maintains participant anonymity at all stages and removes the influence of highly dominant participants and the pressure to conform.[18] The Delphi is a group communication process which is operationalised via a structured, isolated, iterative method of repetitive administration of questionnaires across a number of rounds.[19,20]

Key features of the Delphi technique are: identifying the participants (expert panel members); anonymity; structured data collection questionnaires; feedback to expert panel members allowing them to reflect and reconsider their responses; and statistical aggregation of responses.[19,20] This study employed the modified Delphi technique in that the first round was not the traditional qualitative enquiry to generate statements and also only one round was conducted.

Setting

This research was conducted within Abu Dhabi, the largest emirate in the UAE, with the highest rate of healthcare expenditure and more established governance systems than the other emirates.

Delphi statements

The statements for the first round of the Delphi were developed from a review of systematic literature reviews related to medicines management,[8-10] and policy

guidance statements.[21] Statements were developed and organised into key elements of the medicines management model: guidelines for medicines management in elderly hospitalised patients; medicines reconciliation; medicines selection, prescribing and review; medicines adherence; medicines counselling; health professional training; and evaluation research.

Two theoretical frameworks were applied in the construction of the Delphi statements, Normalization Process Theory (NPT) and the Theoretical Domains Framework (TDF). NPT explains '…the social processes through which new or modified practices of thinking, enacting and organising work are operationalised in healthcare and other institutionalised settings'.[22] The theory proposes that:

1. practices become routinely embedded in social contexts as the result of people working, individually and collectively, to implement them;
2. the work of implementation is operationalised through four generative mechanisms or constructs of: coherence; cognitive participation; collective action; and reflexive monitoring;
3. the production and reproduction of a practice requires continuous investment.[22,23]

NPT was applied to develop statements in terms of coherence (definitions of key elements of medicines management), cognitive participation (task allocation of the responsibilities of health professionals), collective action (the actual work or skills involved in delivering the tasks) and reflexive monitoring (specialised education and training services).

TDF is a framework of theories of behaviour change which aims to '…simplify and integrate a plethora of behaviour change theories and make theory more accessible to, and usable by, other disciplines'.[24] TDF was derived from 33 psychological theories and 128 theoretical constructs organised into 14 overarching domains (e.g. knowledge, beliefs of consequences, social influences etc.).[24,25]

The statements were tested for face and content validity by a panel of seven key individuals in the fields of medicines management, healthcare processes, behaviour change and research, based in Scotland and the UAE. These individuals, identified from

professional networks, were emailed the statements with instructions to comment on clarity and appropriateness. Responses allowed further refinements of the statements in terms of wording, sequencing and some additional statements were suggested.

Determining consensus

The following six-point Likert scale was used for each statement: strongly disagree; disagree; somewhat disagree; somewhat agree; agree; and strongly agree. The approaches described in the literature for determining the point of consensus include: a stipulated number of rounds; subjective analysis; certain level of agreement; average percent of majority opinions cut-off rate; mode, mean, median ratings and rankings; interquartile range; coefficient of variation; and post-group consensus.[26] The 'certain level of agreement' was adopted in this study and while it has been highlighted that there is no set standard for the target percentage of agreement,[27] 70% (summative agree and strongly agree) was set as the target as commonly employed in other studies.[25]

Expert panel members

The careful selection of participants as 'expert panel members' is an essential step to provide robust and valid data. Panellists should represent the key stakeholders, experts in the field, and policy and decision makers.[28] Delphi study findings are considered to be more valid if panellists are recruited from heterogeneous groups and, while there is no clear guidance on the number of panellists, it is argued that minimal change in reliability of findings is likely beyond 30 members.[26-28]

In this study, panellists were recruited from: all 18 public hospitals in Abu Dhabi which had been authorized by HAAD to conduct research on human subjects; HAAD; and Al Ain Medical University. The sampling frame included targeted strategic health practitioner leads, decision aid developers and researchers, policy makers, as these would have the required knowledge, experience and policy influence. These were: senior physicians working within the geriatric speciality, or those with ten years or more experience in managing elderly patients; hospital pharmacy and nursing directors; chief health professionals (nurses, pharmacists, physicians) holding strategic positions within HAAD;

chief policy makers in hospitals or HAAD; chief social workers in hospitals or HAAD; and senior educators or researchers in Al Ain Medical School. The sampling frame was estimated to be around 75 health professionals and 25 other professionals. While patient group experts would be included in countries such as the United Kingdom, the philosophy of involving patients in strategic decision making in the UAE is in its infancy hence patients were not included.

Recruitment of panellists

A snowball sampling approach was employed with the principal investigator having face to face meetings with: the senior physician for geriatrics, directors of pharmacy and nursing in one hospital; the manager for clinical reviews and investigations at HAAD; and a university professor. The study requirements were discussed, each provided with an email invitation and participant information leaflet, requesting that they forwarded this to others meeting the criteria as described in Table 1.

Insert table 1 here

Informed consent was obtained from each panellist once they had accepted the invitation to participate.

Delphi rounds

At the point of study commencement, each panellist was sent an email with a link to the online questionnaire which had been formatted using SNAP 10 (an integrated software package used to design surveys for printing or publishing on the web). Data generated from online surveys using SNAP can be transferred directly into SPSS for analysis.

Delphi round 1

The round 1 questionnaire was structured into eight sections covering key elements of medicines management, each with several statements. Panellists were requested to rate their levels of agreement or disagreement with each statement on the 6-point Likert scale. A comments box was included for each statement, allowing justification of responses and proposing new statements. A three week deadline was given for

completion and return of round 1. Descriptive statistics (frequencies and percentages) were used to analyse responses. Content analysis was undertaken for textual responses to identify any emerging themes.[29]

Delphi round 2

Each panellist was provided with the summary responses for each statement, the verbatim panellists' comments for each statement and any comments from the research team. Due to the level of consensus achieved, the second round provided an opportunity to gathering panellists' views and experiences of the Delphi approach and its potential uses in the UAE.

A separate survey tool was developed, consisting of a series of statement to be rated using a semantic differential scale which required panellists' to choose a response between two bipolar options (e.g. 'easy' and 'difficult'). A three week deadline was given to panellists for completion of round 2. Descriptive categorical statistics (median, interquartile range (IQR)) were used for analysis.

Research ethics

Approval was obtained from the ethical review panel of the School of Pharmacy and Life Sciences at Robert Gordon University and from HAAD.

RESULTS

Round 1

Responses were received from 26 panellists (86.7%); two directors of nursing, one family physician and one public health advisor did not respond. Responses to the round one statements on general aspects and guidelines for medicines management are given in Table 2. Consensus was achieved for all statements other than that relating to targeting medicines management activities only to those admitted with medicines related issues.

Insert table 2 here

Responses relating to medicines reconciliation and medicines review are given in Table 3. While consensus was not achieved that medicines reconciliation could be undertaken by

any nurse, pharmacist or physician, it was achieved that it should only be undertaken by a health professional trained in that role. Similar responses were received in relation to the health profession which should undertake medicines review. Consensus was not achieved for that only elderly patients admitted with a medicines related issue should have a full medicines review.

Insert table 3 here

Responses relating to medicines adherence and counselling are given in Table 4. While consensus was not achieved that determination of medicines adherence could be undertaken by any nurse, pharmacist or physician, it was achieved that it should only be undertaken by a health professional trained in that role. Similar responses were received in relation to the health profession which should undertake medicines counselling. Consensus was not achieved that counselling should be targeted but should be provided to all. Few comments were provided by the panellists in round one, and there was a notable absence of comments from those disagreeing. No new statements were suggested.

Insert table 4 here

Responses relating to training and evaluation research are given in Table 5. Consensus was reached for all statements.

Insert table 5 here

Round 2

During round 2, panellists were provided with the detailed results of round 1,

highlighting most of statements achieving consensus agreement (≥70%). While 20 statements did not reach consensus, the decision was taken to not repeat a further round attempting to gain consensus for these 20. It was considered that the responses to those statements achieving consensus themselves explained those not achieving consensus. For example, while consensus was achieved that all elderly patients should be a focus for medicines management, it was not achieved for only targeted patients. The second round therefore focused on panellists' views and experiences of the Delphi approach and its potential uses in the UAE.

The response rate was 83% (n=25). Eighty-four percent (n=21) of panellists were not previously aware of consensus methods and only 8% (n=2) had prior experience of being involved in a consensus study. Views were generally positive in relation to their involvement in the study and the potential to use this approach in further service developments. Table 6 gives detailed responses.

Insert table 6 here

DISCUSSION

Key findings are that a high level of consensus was obtained for most statements relating to the structures and processes of medicines management for elderly hospitalised patients. While consensus was not achieved for targeting only those patients with medicines related issues, it was achieved for focusing on all elderly admissions. Similarly, consensus was not achieved for which professions were most suited to roles but was achieved that those delivering the roles should be trained. Panellists were positive about the Delphi study and its potential to be employed in further health related developments. While few panellists had prior experience of consensus methods, almost all rated their experience positively and would consider this in future health related developments.

Strengths and limitations

Strengths of this study include grounding the statements in evidence derived from systematic reviews and previous research, and use of two recognised theoretical frameworks of behavioural change, and intervention development, implementation and sustainability.[8-10, 13, 22-25]. Furthermore the panellists represented a heterogeneous group of key stakeholders, increasing the likelihood of internal validity, and a high response rate was obtained throughout the Delphi, increasing generalisability.

However, there are study limitations and hence the findings should be interpreted with caution. The cut off value for consensus of agreement was rather arbitrary with no set of standard, although this is one of the most widely used approaches.[26,27] For those statements which had levels of agreement over 90%, several panellists strongly disagreed, indicating diametrically opposite views, which could reduce the internal validity. Due to the method of data collection, it was not possible to identify any of the respondents or to match response items and it may have been that the same individuals or types of individuals were disagreeing with the statements. This could have implications for implementing study findings. There was also a notable absence of comments to explain responses, particularly from those disagreeing with the statements. Moreover, though the study was unique in its focus on the UAE, its generalisability may be questionable due to cultural and conceptual differences.[30] It is, however, likely that the approach used in this study, the use of the theoretical models and most importantly, the findings, will be applicable globally.

Interpretation of findings

Responses to statements are in line with the concept of clinical governance, ‘a system through which organisations are accountable for continuously improving the quality of their services and safeguarding high standards of care by creating an environment in which excellence in clinical care will flourish’.[31] Responses highlight the need for trained staff to deliver high quality service supported by standard operating procedures and clearly documented audit trails.

Only a few previous studies have used a consensus approach to any aspect of medicines management, around rational prescribing in Iran,[32] medicines reconciliation in the

United States,[33] patient non-adherence in Europe,[34] and minimising inappropriate prescribing in the elderly in Europe.[35 Results highlighted a degree of consensus around processes of medicines management and the need to clearly define processes and allocate tasks. Our study provided definitions of 'medicines management', 'medicines reconciliation', 'medicines review', 'appropriate polypharmacy' and 'medicines counselling' in an attempt to promote coherence and shared beliefs of health professionals in relation to these processes; importantly high levels of consensus were obtained for all. Panellist responses also indicated that all elderly patients admitted to hospital should receive the same focus on medicines management, irrespective of the reason for admission. There may, however, be resource implications in delivering such a service (i.e. the entire medicines management model including determining adherence and medicines review) for all irrespective of the reason for admission or planned duration. Key aspects of NPT are cognitive participation and collective action with clearly defined and agreed task and task allocation. Interestingly, consensus was not achieved for which health professions should deliver tasks such as medicines reconciliation, review and counselling, preferring to agree that those delivering the role should be trained and hence competent. This would go some way to avoiding task omission or task duplication in these areas, which was identified in recent qualitative work.[13] The expressed need for research evaluation to monitor the effect of medicines management guidelines, task allocation, standard operating procedures and standards of documentation was evident and reassuring. This aligns to the NPT construct of reflexive monitoring which is more likely to result in sustainable, patient centred processes resulting in desired outcomes with enhanced patient safety.[22,23] It is essential that this focus on medicines management is continued as patients are discharged into primary care (and beyond) given the multitude of evidence of medicines related issues at the point of patient transfer and that these can be reduced by medicines reconciliation.[8,9,36] Further research will focus on developing the guidelines, with an advisory group of panellists and practitioners, and pilot testing these with evaluation from the perspectives of health professionals, managers, leaders ad patients prior to full scale implementation. Emphasis

needs to be placed on the economic consequences of guidelines and the impact on patients not covered by the guideline.

Conclusion

High levels of consensus were obtained for structures and processes of medicines management relating to elderly hospitalised patients. Trained and competent health professionals were preferred to specific professions for any tasks and that all elderly patients and not targeted patients should be the focus for medicines management.

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COMPETING INTERESTS

The authors have no competing interests to declare.

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Table 1: Delphi panellists (N=30)

Panellists	**Number**
Physician (geriatrics)	3
Physician (family)	3
Hospital pharmacy directors	5
Hospital nursing directors	5
Manager for clinical reviews and investigations (HAAD)	1
Medical advisor (HAAD)	2
Director of public health (HAAD)	1
Public health advisor (HAAD)	1
Policy maker (HAAD)	2
Chief social worker (HAAD)	2
Senior academics at medical faculty	5

Table 2 – Responses relating to general comments and guidelines for medicines management (N=26)

Statements	**Strongly disagree**	**Disagree**	**Somewhat disagree**	**Somewhat agree**	**Agree**	**Strongly agree**	**% consensus***
The following definition of medicines management should be adopted in the UAE - 'the clinical, safe and cost effective use of medicines to ensure patients get the maximum benefit from the medicines they need, while at the same time minimizing potential harm'	4				6	16	85
Elderly patients with multi-morbidities are at particular risk of medicines related issues	2				7	17	92
Medicines management should be a focus in the care of every elderly patient admitted to hospital, irrespective of the reason for admission or presenting complaint	2			1	7	16	88
Medicines management should be a focus in the care of every elderly patient admitted to hospital, irrespective of the admitting ward or speciality	2				8	16	92
Medicines management should be a focus in the care of elderly patient admitted to hospital, irrespective of the duration of stay in hospital	2			3	7	14	81
Medicines management should only be a focus in the care of elderly patients admitted to hospital with a medicines related issue	10	5		2	5	4	35
Medicines management is the responsibility of all nurses, pharmacists and physicians	1			3	3	19	85
All nurses, pharmacists, physicians should be competent in medicines management	1			1	9	15	92
Evidence based recommendations which focus on single disease states should be applied with caution in elderly patients with multi-morbidities	1			1	8	16	92
There is a need to develop guidelines for medicines management in elderly hospitalised patients in the UAE	2			1	7	16	88
A guideline development group should be established, under the auspices of HAAD, with representation from experts in medicines in the elderly	2		1	1	9	13	85
The guidelines should have a focus on medicines reconciliation at the point of admitting and discharging elderly patients to hospital	2			1	8	15	88
The guidelines should have a focus on the prescribing of medicines in the elderly	2				11	13	92
The guidelines should have a focus on the monitoring of medicines in the elderly	1				10	15	96
The guidelines should have a focus on managing inappropriate polypharmacy in elderly patients with multi-morbidities. (Inappropriate polypharmacy is	1	1			10	14	92

defined as 'the prescribing of too many medicines which are unsuitable or no longer indicated')							
The guidelines should have a focus on reviewing all medicines in elderly patients with multi-morbidities to promote appropriate polypharmacy (Appropriate polypharmacy is 'prescribing of many medicines but which are suitable')					9	17	100
The guidelines should highlight high risk medicines in the elderly	1				7	18	96
The guidelines should highlight potentially inappropriate medicines in the elderly	1	1		1	6	16	88
Consideration should be given to adapting defined lists of high risk or potentially inappropriate medicines in the elderly, for the UAE context, such as: Beers Criteria; STOPP Criteria; IPET	1	1			12	12	92
The guidelines should have a focus on identifying and managing adverse drug reactions in the elderly	1		1	1	9	14	88
Consideration should be given to adapting defined list of commonly omitted medicines in the elderly, for the UAE context, such as: START Criteria	1	1		4	7	13	77
Consideration should be given to adopting validated measures of adherence, such as: Morisky scale; Medication adherence questionnaire; Self-Efficacy for Appropriate Medication Use Scale		1		4	7	14	81
The guidelines should have a focus on adherence (or non-adherence) to medicines	1	1		3	10	11	81
Consideration should be given to adopting evidence based approaches to guideline implementation in the UAE				2	10	14	92

*summative percentage of respondents agreeing or strongly agreeing

Table 3– Responses relating to medicines reconciliation and medicines review (N=26)

Statements	**Strongly disagree**	**Disagree**	**Somewhat disagree**	**Somewhat agree**	**Agree**	**Strongly agree**	**% consensus***
The following definition of medicines reconciliation should be adopted in the UAE - 'the process of identifying the most accurate list of a patient's current medicines – including the name, dosage, frequency and route – and comparing them to the current list in use, recognizing and discrepancies, and documenting any changes, thus resulting in a complete list of medications, accurately communicated'	1			2	11	12	88
Medicines reconciliation should be determined at the point of admission to and discharge from hospital	1				9	16	96
Determination of medicines reconciliation can be undertaken by any nurse, pharmacist, physician	1	5	4	7	5	4	35
Determination of medicines reconciliation can be undertaken by any nurse	5	6	6	5	2	2	15
Determination of medicines reconciliation can be undertaken by any pharmacist	1	3	3	7	6	6	46
Determination of medicines reconciliation can be undertaken by any physician	1	3	3	4	8	7	58
Determination of medicines reconciliation should only be undertaken by a health professional trained in that role		2	3	2	9	10	73
Determination of medicines reconciliation in an elderly patient with dementia or other cognitive impairment requires specialist input		1		1	12	12	92
Any medicines related issues resulting from determination of medicines reconciliation should be recorded in the shared medical records				2	9	15	92
There is a need for a standard operating procedure to guide the determination of medicines reconciliation in elderly patients	1		1		9	15	92
There is a need to develop standardised documentation to record determination of medicines reconciliation in elderly patients		2			7	17	92
The following definition of medicines review should be adopted in the UAE - 'a structured, critical examination of the complete list of a patient's medicines with the objective of reaching an agreement with the patient about treatment, optimising the impact of medicines, minimising the number of medication-related problems and reducing waste'			1	1	16	8	92
All elderly patients with multi-morbidities should have a full medicines review during their stay in hospital to promote appropriate polypharmacy		1		2	8	15	88
Only elderly patients admitted with a medicines related issue should have a full medicines review during their stay in hospital to promote appropriate	6	5	5	2	6	2	31

polypharmacy							
A full medicines review can be undertaken by any nurse, pharmacist, physician	3	8	5	1	6	3	35
A full medicines review can be undertaken by any nurse	10	3	10		3		12
A full medicines review can be undertaken by any pharmacist	2	5	2	5	4	8	46
A full medicines review can be undertaken by any physician	2	3	3	4	9	5	54
A full medicines review should only be undertaken by a health professional trained in that role	2	1	1	3	7	12	73
A full medicines review in an elderly patient with dementia or other cognitive impairment requires specialist input	1	1	1		9	14	88
Any medicines related issues resulting from a full medicines review should be recorded in the shared medical records		1	1		8	16	92
There is a need for a standard operating procedure to guide the conduct of a full medicines review in elderly patients			1		10	15	96
There is a need to develop standardised documentation to record a full medicines review in elderly patients			1	1	8	16	92
A multi-disciplinary ward team (specifically nurses, pharmacists and physicians) should review the medicines prescribed to elderly patients on a regular basis during their stay in hospital			1	3	6	16	85
All medicines prescribed to elderly patients during stay in hospital should be reviewed prior to their discharge			1		9	16	96
The standard operating procedure should include providing information to health professionals (family doctor, nurse, pharmacist) working in primary care informing them of the nature of any changes made to medicines during stay and any follow-up required			1		9	16	96

*summative percentage of respondents agreeing or strongly agreeing

Table 4 – Responses relating to medicines adherence and counselling (N=26)

Statements	**Strongly disagree**	**Disagree**	**Somewhat disagree**	**Somewhat agree**	**Agree**	**Strongly agree**	**% consensus***
The following definition of medicines adherence should be adopted in the UAE - 'the extent to which patients take medicines as prescribed by their health care providers'	1			1	13	11	92
Adherence (or non-adherence) to all medicines should be determined at the point of admitting all elderly patients to hospital	2	1		4	9	10	73
Determination of adherence (or non-adherence) can be undertaken by any nurse, pharmacist, physician	1	4	3	8	6	4	38
Determination of adherence (or non-adherence) can be undertaken by any nurse	3	5	1	10	6	1	27
Determination of adherence (or non-adherence) can be undertaken by any pharmacist	1	2	2	5	9	7	62
Determination of adherence (or non-adherence) can be undertaken by any physician	2	2	1	5	11	5	62
Determination of adherence (or non-adherence) should only be undertaken by a health professional trained in that role	2	1	1	1	14	7	81
Determination of adherence (or non-adherence) in an elderly patient with dementia or other cognitive impairment requires specialist input	1		2	3	9	11	77
Any medicines related issues resulting from determination of adherence should be recorded in the shared medical records			1		11	14	96
There is a need for a standard operating procedure to guide the determination of adherence (or non-adherence) in elderly patients	1		3	1	6	15	81
There is a need to develop standardised documentation to record determination of adherence (or non-adherence) in elderly patients	1		2		7	16	88
The following definition of medicines counselling should be adopted in the UAE - 'provision of advice and instruction by a health care professional to patients regarding the appropriate use of their medicines'	1		1	1	8	15	88
All elderly patients should be counselled on their medicines prior to discharge			1		8	17	96
Only elderly patients identified as non-adherent/ potentially non-adherent should be targeted for counselling on their medicines prior to discharge	4	7	4	1	5	5	38
Only elderly patients commenced new medicines or having a change in medicines should be targeted for counselling on their medicines prior to discharge	5	8	2	2	8	1	35
Medicines counselling can be undertaken by any nurse, pharmacist, physician	5	6	4	4	5	2	27
Medicines counselling can be undertaken by any nurse	6	8	7	3	1	1	8

Medicines counselling can be undertaken by any pharmacist	2	2	2	5	6	9	58
Medicines counselling can be undertaken by any physician	2	6	1	5	8	4	46
Medicines counselling should only be undertaken by a health professional trained in that role	2	1	1	3	9	10	73
Medicines counselling in an elderly patient with dementia or other cognitive impairment requires specialist input			1	2	11	12	88
Medicines counselling should always involve the elderly patient's family/carers/friends where appropriate	1		1	1	7	16	88
Counselling should focus on elderly patients' beliefs, intentions and values relating to medicines to encourage behavioural and lifestyle changes	1		1	3	9	12	81
There is a need for a standard operating procedure to guide medicines counselling in elderly patients	1		2	1	6	16	85
The standard operating procedure should include providing information to health professionals (family doctor, nurse, pharmacist) working in primary care informing them of the nature of any counselling provided prior to discharge and any follow-up support required				1	10	15	96
There is a need to develop standardised documentation to record counselling in elderly patients	1			1	9	15	92

*summative percentage of respondents agreeing or strongly agreeing

Table 5 – Responses relating to health professional training and evaluation research (N=26)

Statements	**Strongly disagree**	**Disagree**	**Somewhat disagree**	**Somewhat agree**	**Agree**	**Strongly agree**	**% consensus***
All health professionals working with medicines in the elderly should receive regular, ongoing training relating to medicines management	1		1		7	17	92
Training should focus on patient involvement in decision making	1		1	2	9	13	85
Training should focus on aspects of cultural diversity	1		2		10	13	88
Consideration should be given to developing a research programme to evaluate the implementation of the these guidelines in the UAE	1			1	10	14	92
Evaluation should consider the perspectives of all stakeholders, including patients	1				10	15	96

*summative percentage of respondents agreeing or strongly agreeing

Table 6 – Panellists' views of their involvement in the Delphi study (N=25)

Anchor Statements (1)	1 % (n)	2 % (n)	3 % (n)	4 % (n)	5 % (n)	Anchor Statements (5)	Median (M) & Interquartile range (IQR)
The information provided was sufficient to complete the tasks	68 (17)	16 (4)	8 (2)	4 (1)	4 (1)	The information provided was insufficient to complete the tasks	M = 1 IQR = 1
I had sufficient knowledge and understanding of the subject to participate	32 (8)	52 (13)	8 (2)	4 (1)	4 (1)	I had insufficient knowledge and understanding of the subject to participate	M = 2 IQR = 1
Completing the survey was time consuming	0	12 (3)	60 (15)	16 (4)	12 (3)	Completing the survey was not time consuming	M = 3 IQR = 1
The survey was easy to complete	12 (3)	64 (16)	12 (3)	8 (2)	4 (1)	The survey was difficult to complete	M = 2 IQR = 0.5
Statements were not at all threatening	68 (17)	8 (2)	12 (3)	0	12 (3)	Statements were extremely threatening	M = 1 IQR = 1.5
I gained new knowledge from completing the survey	20 (5)	52 (13)	12 (3)	12 (3)	4 (1)	I did not gain new knowledge from completing the survey	M = 2 IQR = 1
I was under no pressure to agree with the other panel members	68 (17)	16 (4)	4 (1)	4 (1)	8 (2)	I felt under great pressure to agree with the other panel members	M = 1 IQR = 1
The Delphi was a very useful approach to obtaining consensus	36 (9)	48 (12)	8 (2)	0	8 (2)	The Delphi was not very useful approach to obtaining consensus	M = 2 IQR = 1
The Delphi process met my expectations	48 (12)	28 (7)	16 (4)	4 (1)	4 (1)	The Delphi process did not meet my expectations	M = 2 IQR = 1.5
Using the Delphi approach in developing medicines management guidelines was effective	24 (6)	60 (15)	8 (2)	4 (1)	4 (1)	Using the Delphi approach in developing medicines management guidelines was not effective	M = 2 IQR = 0.5
Using the Delphi approach promoted multidisciplinary working	40 (10)	44 (11)	12 (3)	4 (1)	0	Using the Delphi approach did not promote multidisciplinary working	M = 2 IQR = 1

I will consider adopting the Delphi approach to future practice developments	28 (7)	52 (13)	8 (2)	12 (3)	0	I will not consider adopting the Delphi approach to future practice developments	M = 2 IQR = 1