Development of a Medication Discrepancy Classification System to Evaluate the Process of Medication Reconciliation (Work in progress)

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Overview

1. Rationale for the development of the medication discrepancy classification system
2. Purpose of study
3. Study design and method
4. Development stage of the medication discrepancy classification system
5. Judgment-quantification stage
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1. Rationale of the development of the medication discrepancy classification system

- Delivery of care is complex and uncoordinated.[1]
- An expanding evidence base demonstrates that serious deficiencies in quality exist for patients undergoing transitions across sites of care. [2]
- As a result several international organizations, including the World Health Organization (WHO), The Joint Commission (TJC), the National Institute for Clinical Excellence (NICE) and others have campaigned for an increased focus on accurate information transfer at transition points in care.[3]

1. IOM, CROSSING THE QUALITY CHASM: A NEW HEALTH SYSTEM FOR THE 21ST CENTURY .
2. Coleman, Eric A., et al. "The care transitions intervention: results of a randomized controlled trial." Archives of internal medicine 166.17 (2006): 1822-1828.
3. Almanasreh, Enas, et al. "The medication reconciliation process and classification of discrepancies: a systematic review." British journal of clinical pharmacology 82.3 (2016): 645-658.

1. Rational of the development of the medication discrepancy classification system (continued)

- Medication discrepancies at care transitions are common and lead to patient harm.[1]
- Approximately half of all hospital medication errors and 20% of ADEs occur as result of miscommunication at the interfaces of care.[2,3]
- Medication reconciliation is a strategy to reduce the incidence and the risk of medication discrepancies that occur during care at points of transition.[1,3]

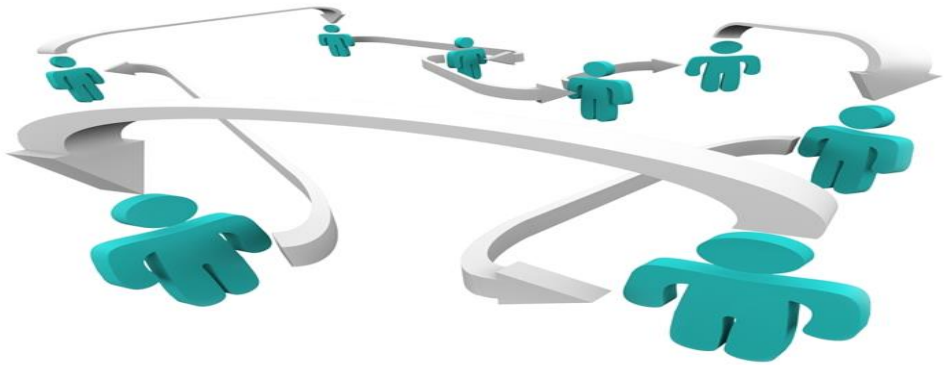
1. Mueller, et al., Hospital-based medication reconciliation practices: a systematic review, Archives of Internal Medicine, 2012
2. Rozich and Resar, Medication safety: one organization's approach to the challenge, Clin Outcomes Manage, 2001
3. Barnsteiner, Medication Reconciliation: Transfer of medication information across settings—keeping it free from error, AJN, 2005

1. Medication reconciliation

- Medication reconciliation is a part of the medication management process and important for patient safety at transitions of care.

- It requires a systematic and comprehensive review of all patients' medications to ensure that medications being added, changed or discontinued are carefully evaluated and transferred to the next healthcare provider.

- However, there is a little agreement on a standardised medication reconciliation practice.



1. Evaluation of medication reconciliation: Literature review

- Mueller et al. found that the heterogeneity between medication reconciliation **interventions** produces more barriers to identifying good practice.[1]

- Lebenhom et al. demonstrated that the literature was highly diverse and there was inconsistency between the majority of studies in term of **methods and outcome** measures making it difficult to assess the influence of medication reconciliation.[2]

- Bayomi at al. found that **similarity** in interventions, populations and outcomes between studies **did not produce comparable results.**[3]

1. Mueller, et al., Hospital-based medication reconciliation practices: a systematic review, Archives of Internal Medicine, 2012
2. Lebenhom et al., Impact of medication reconciliation and review on clinical outcomes, Ann of Pharmacotherapy, 2014.
3. Bayoumi et al., Interventions to Improve Medication Reconciliation in Primary Care,The Annals of Pharmacotherapy, 2009

2. Purpose of study

- To evaluate how medication discrepancies have been classified in the literature.
- To develop a comprehensive taxonomy to classify medication discrepancies identified through the medication reconciliation process.
- To assess the tool's validity and reliability among healthcare professionals.

3. Study design and method

I. Development Stage

- ❑ The medication discrepancy classification system was developed based on:

1. A comprehensive systematic review of the literature.
2. The experience of our research team.

II. Judgment and Quantification Stage:

- ❑ The medication discrepancy classification system is undergoing psychometric testing for:

1. Content Validity (Expert opinion)
2. Reliability Testing
    a. Test-retest
    b. Inter-rater reliability

4. Development stage

Systematic review of the literature:

Method:

- We searched six different databases in accordance with the PRISMA statement up to April 2016.[1]

- The search strategy included two main terms '**medication reconciliation**' and '**medication discrepancy**'

- **Inclusion criteria:**

The studies were eligible for inclusion if:

- The interventions involved medication reconciliation
- They aimed to classify the medication discrepancies
- They contained a classification system for these discrepancies.

1. Almanasreh, Enas, et al. "The medication reconciliation process and classification of discrepancies: a systematic review." British journal of clinical pharmacology 82.3 (2016): 645-658.

4. Systematic review of the literature (continued)

Results and findings

- Ninety-five (95) studies were included in our review.

- Three taxonomies for classifying medication discrepancies were identified:

1. The Medication Discrepancy Tool (MDT) (2004, USA) -19items
2. The APS-Doc classification (2012, Germany) - 48 items
3. Taxonomy for unintended medication discrepancy (2012, Belgium) - 11 items

- These tools were utilized in 11 studies (11.6%), three of which described the establishment of the tools.

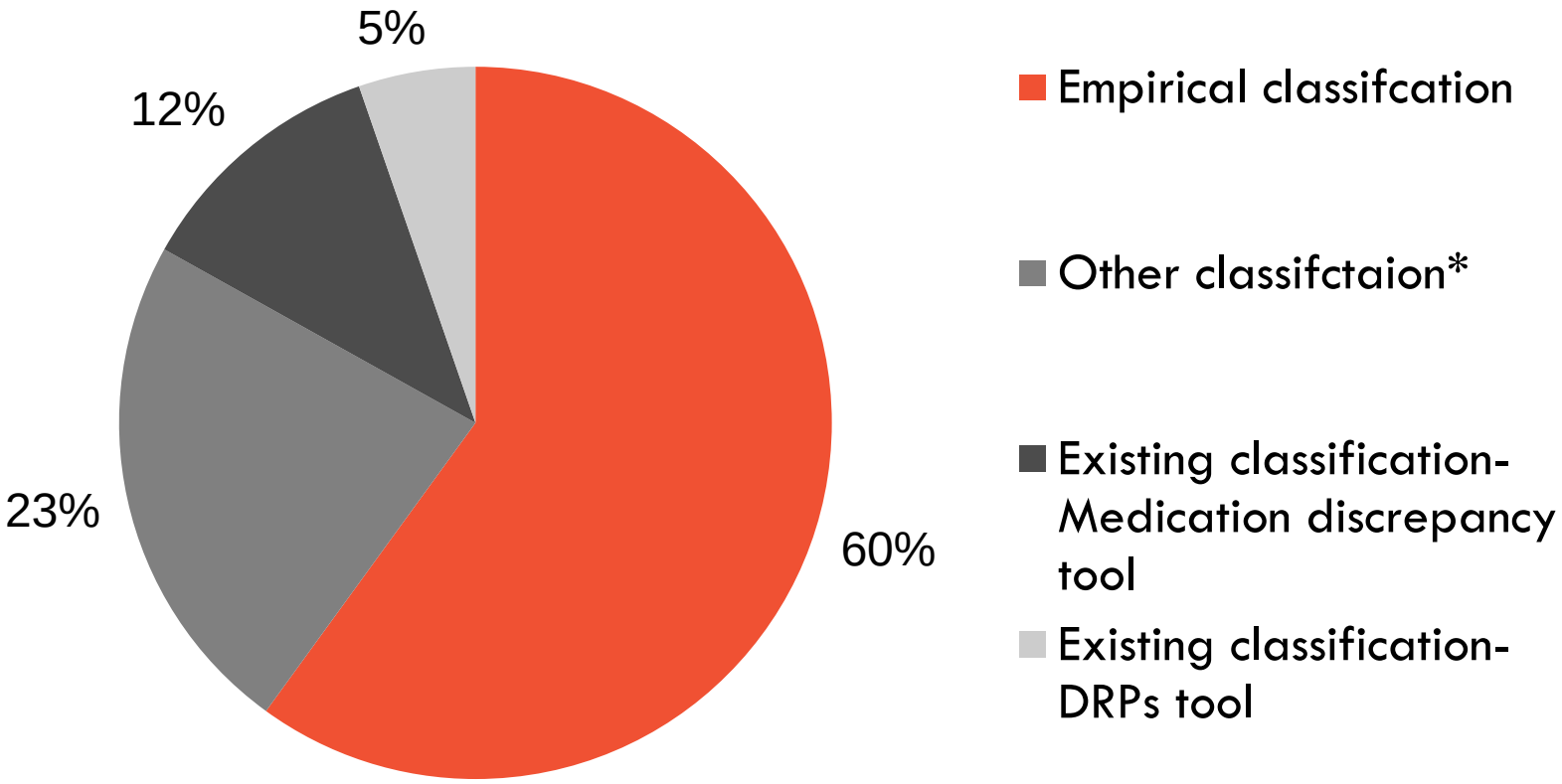
4. Systematic review of the literature (continued)

Results and findings

- The number of classification terms ranged from **2 to 50** terms.
- A small number of studies (11/95, 11.6%) stated the reasons for discrepancies in their categories and seven studies described interventions related to medication discrepancies.
- The most common type of discrepancy in our study sample was **omission** (n = 60/95, 63.2%).

4. Systematic review of the literature (continued)

Medication discrepancy classification methods

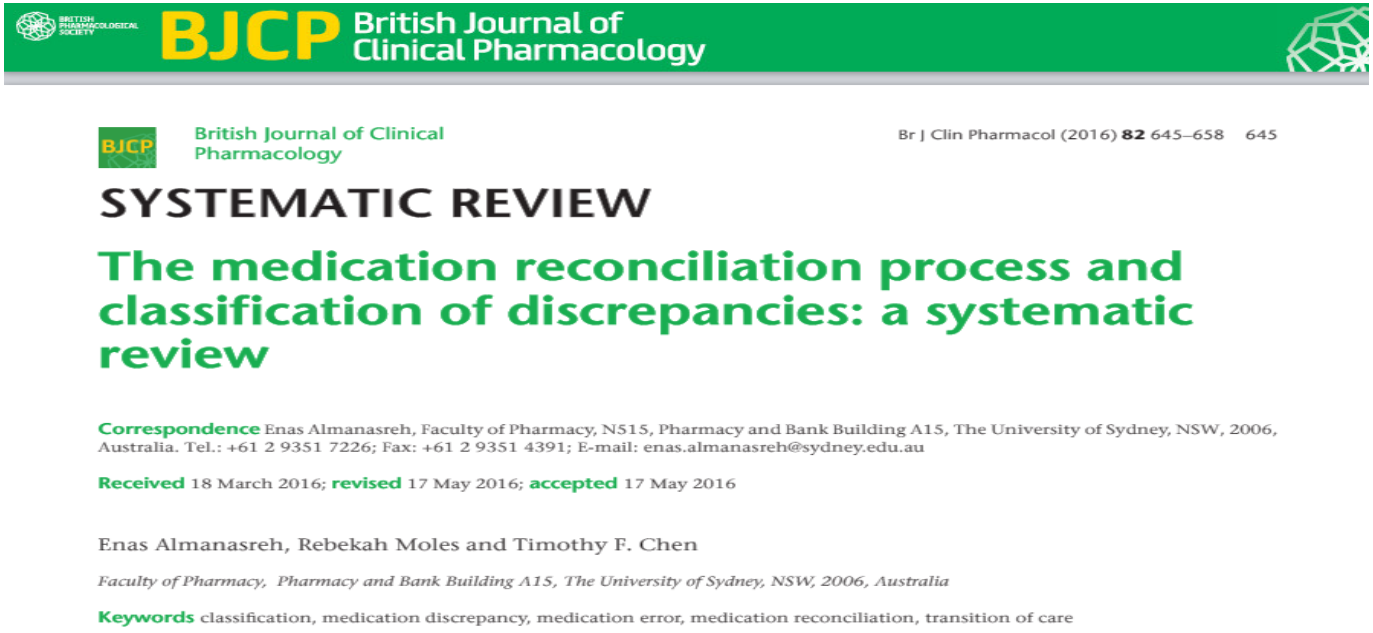


***Other classification: involves studies which classified the medication discrepancies based on classification systems derived from previous published studies, guidelines or organizations**

4. Systematic review of the literature (continued)

Conclusion

- The review identified significant inconsistencies in reporting, measuring and classifying medication discrepancies and the absence of a well-designed tool to evaluate medication reconciliation outcomes.



BJCP British Journal of Clinical Pharmacology

British Journal of Clinical Pharmacology

Br J Clin Pharmacol (2016) **82** 645–658 645

SYSTEMATIC REVIEW

The medication reconciliation process and classification of discrepancies: a systematic review

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Received 18 March 2016; **revised** 17 May 2016; **accepted** 17 May 2016

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Keywords classification, medication discrepancy, medication error, medication reconciliation, transition of care

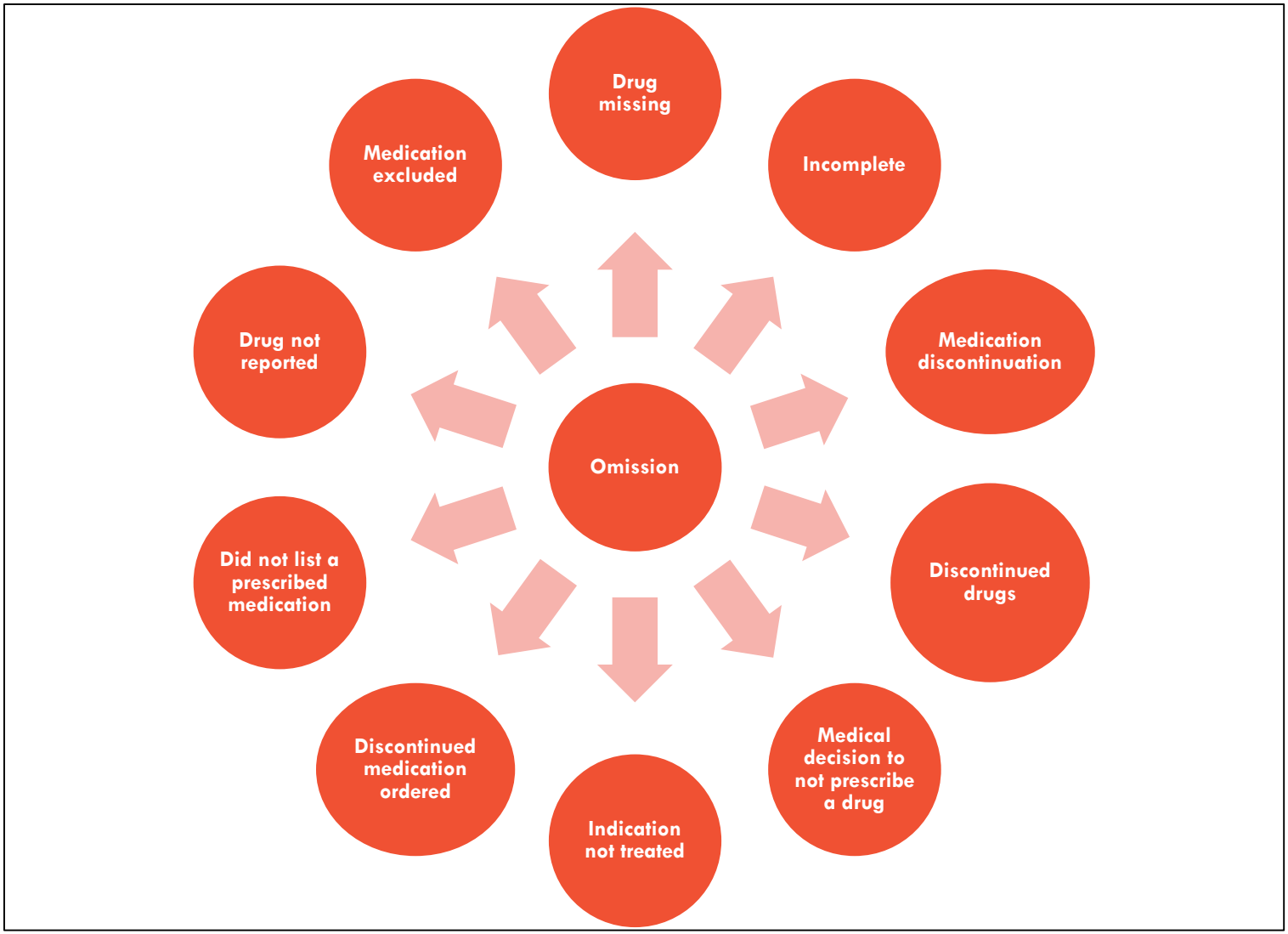
4. Five steps for medication discrepancy classification development

- The development process of the **medication discrepancy classification system** involves the following steps:

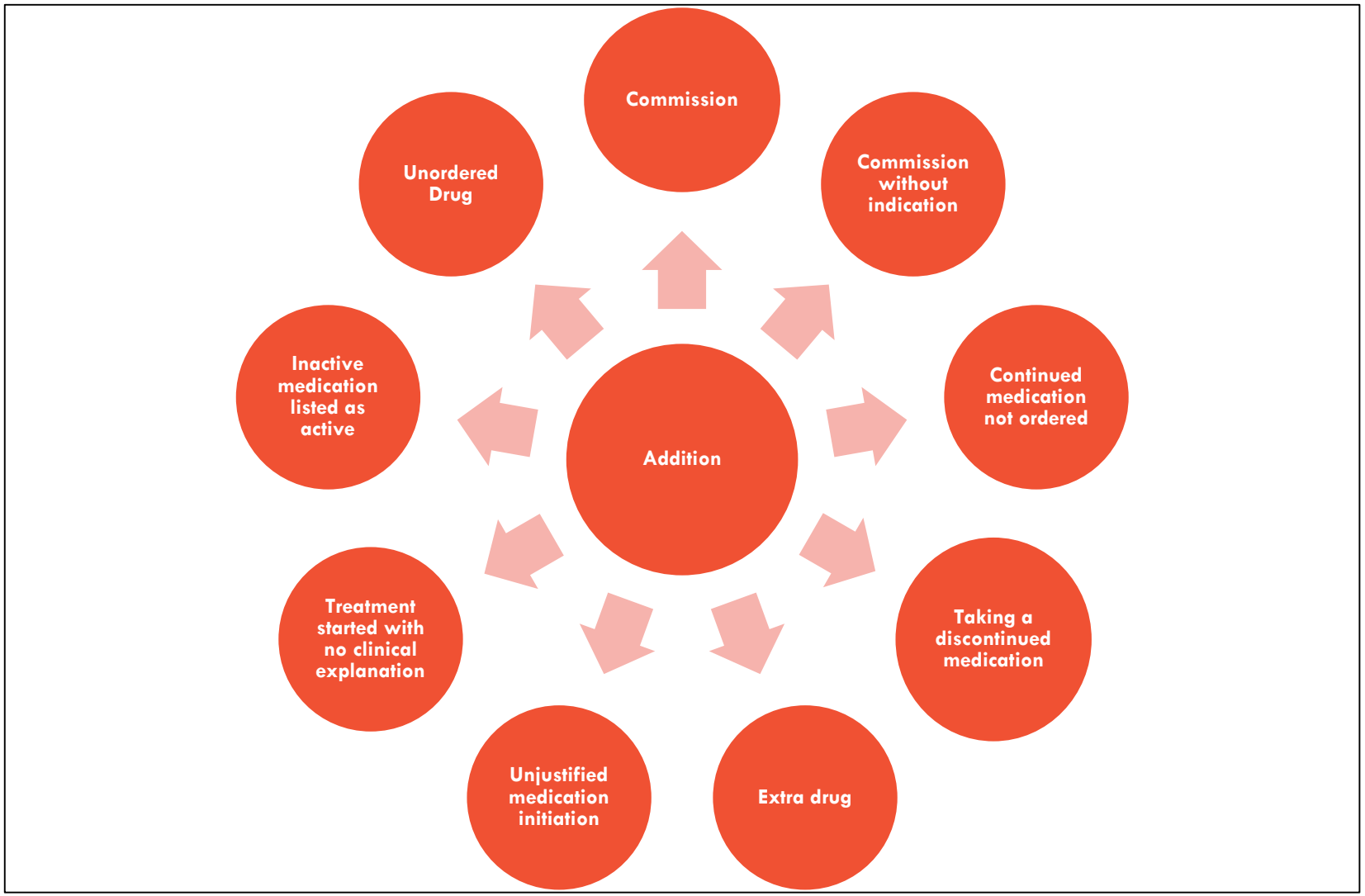
1. Identifying the recognized types of medication discrepancy.
2. Evaluating the components and definitions related to transition of care and medication reconciliation process.
3. Designing framework for classifying the medication discrepancies.
4. Sampling and generating the items (categories and subcategories)
5. Assimilation and rearrangement the categories and subcategories into a usable form (Taxonomy vesrion1)

*Lynn, Mary R. "Determination and quantification of content validity." *Nursing research* 35.6 (1986): 382-386.

4. Example: Sampling and generation of categories



4. Example: Sampling and generation of categories



4. Components of medication discrepancy classification system (Version 1)

- Medication Discrepancy Classification System (Version 1) consists of:

I. Operational definitions:

1. Medication reconciliation
2. Medication discrepancy
3. Transition of care
4. Gold standard medication list

II. Types of medication discrepancies

The tool categorizes the types of medication discrepancies into 13 categories and 28 sub-categories.

III. Causes of medication discrepancies

IV. Interventions/recommendations

4. Medication discrepancy classification system (Version 1)

Types of medication discrepancies:

1. Omission of drug
2. Commission of drug
3. Duplication
4. Allergy/Intolerance
5. No discrepancy
6. Discrepancy in the name of drug (6.1-6.4)
7. Discrepancy in the strength/frequency/total daily dose (7.1-7.10)
8. Discrepancy in dosage form/route of administration (8.1-8.7)
9. Discrepancy in the number/count of units (9.1-9.2)
10. Discrepancy in the timing of administration (10.1-10.4)
11. Discrepancy in the duration of therapy
12. Other
13. Uncategorized/Unable to determine/Unable to compare

5. Judgment-quantification stage

A. Content validity (Expert opinion):

- ❑ An online survey (content validity scale) was constructed.
- ❑ Ethical approval has been granted by the Human Ethics Committee at The University of Sydney.
- ❑ 10 experts were selected based on their experience in the medication reconciliation process, transitions of care and pharmacy practice research.

B. Reliability testing

- ❑ Test-retest
- ❑ Inte-rater reliability

5. Content validity scale

- A 5-point Likert scale was used in the assessment process (1 indicating lack of agreement and 5 indicating excellent agreement)

- Experts rated each category and sub-category of the taxonomy for:

1. **Representativeness**
2. **Uniqueness**
3. **Clarity of the name**
4. **Clarity of the definition**

- The **comprehensiveness** and **clarity** of the operational definitions related to the classification were evaluated.

- The **comprehensiveness** and **usefulness** of the whole instrument were assessed.

5. Content validity scale (continued)

Definition of Transition of care: Transfer of responsibility of the patient's healthcare between different locations or settings, healthcare professionals, healthcare services or within the same setting but between different departments. It may also involve any changes or additions to healthcare services provided to the patient (e.g medication management in the community setting).

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Definition is clear	○	○	○	○	○
Definition is comprehensive	○	○	○	○	○

Please comment if you selected (Strongly disagree, Disagree or neither agree nor disagree)

1. **Omission:**

Definition: The drug is listed on the Gold standard list but not listed on the Test list.

Gold standard list:	**Test List:**
Lasix furosemide 40mg orally BID	.....
Tritace Ramipril 1.25mg orally 1 D	Tritace Ramipril 1.25mg orally 1 D
Plavix Clopidogrel 75mg orally 1 M	Plavix Clopidogrel 75mg orally 1 M

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Category represents a type of medication discrepancy	○	○	○	○	○
Name of category is clear	○	○	○	○	○
Definition of category is clear	○	○	○	○	○
Category is unique and is unlikely to be misinterpreted	○	○	○	○	○

Please comment if you selected (Strongly disagree, Disagree or Neither agree nor disagree)

5. Results of the content validity testing (Medication discrepancy classification (Version1)

Index	(Round 1)	Cut-off value
I-CVI*	121 items– Accepted (0.80-1.00) 29 items – Need revision (0.5-0.7)	0.80
S-CVI** (Ave)	0.88	0.90
S-CVI (UA)	0.40	NA
Modified Kappa	121 items (0.75-1.00) 29 items < 0.74	k > 0.74, Excellent

*I-CVI: Item level-content validity index. **S-CVI: Scale level-content validity index
Total number of items=150

- Therefore, second round is needed to achieve the desired rate of agreement between experts.

6. Strengths and limitation

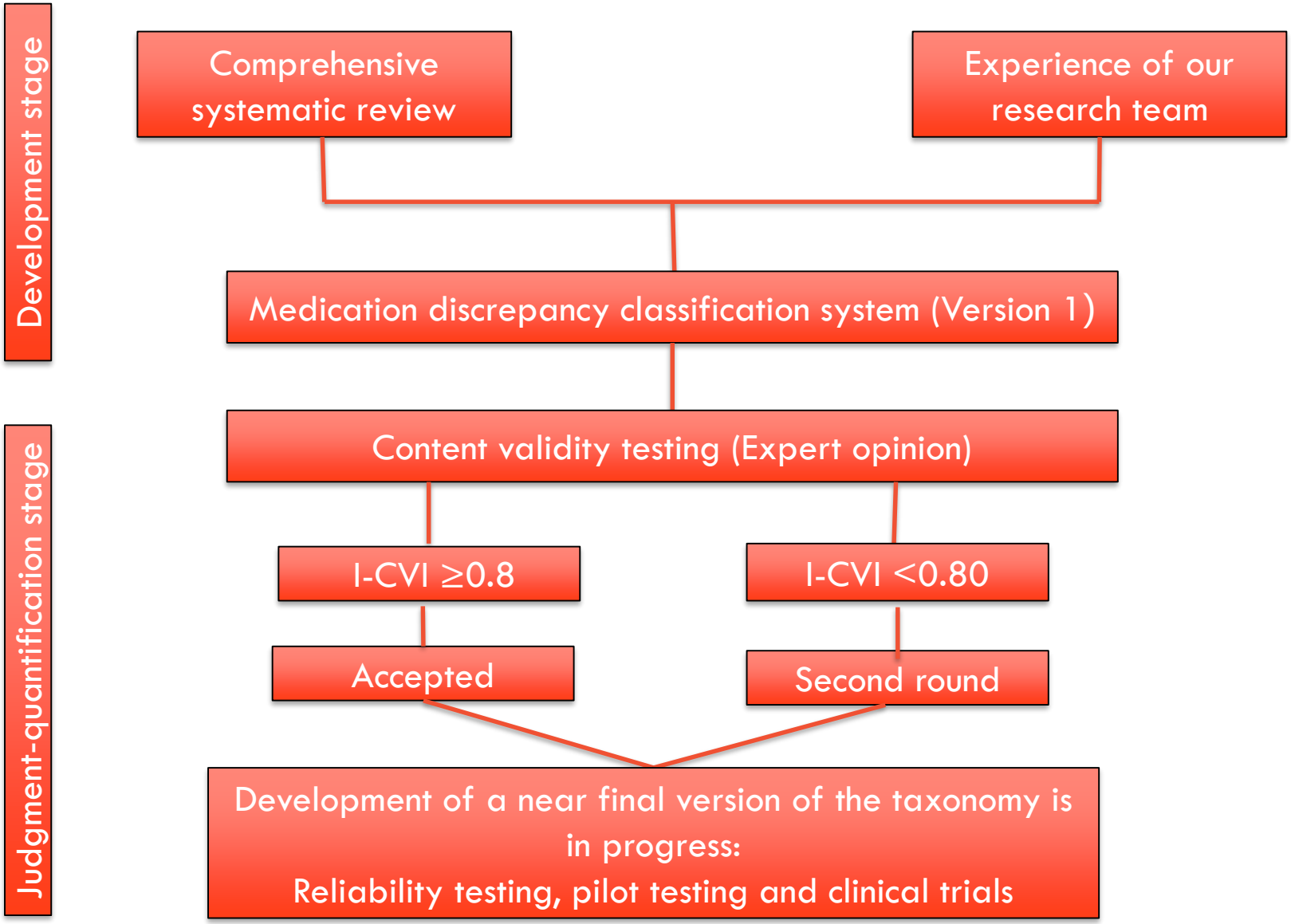
- **Limitation:**

1. The pharmacists may require training and orientation session before utilising the taxonomy.
2. The taxonomy was designed and tested by using pharmacists only.

- **Strengths:**

1. The taxonomy was developed based on a comprehensive approach.
2. It involves a section for the operational definitions which may guide the process of medication reconciliation.
3. The taxonomy is undergoing psychometric testing.

7. Summary:


Development stage
Comprehensive systematic review
Experience of our research team
Medication discrepancy classification system (Version 1)
Judgment-quantification stage
Content validity testing (Expert opinion)
I-CVI ≥0.8
I-CVI <0.80
Accepted
Second round
Development of a near final version of the taxonomy is in progress:
Reliability testing, pilot testing and clinical trials

8. Concluding comments

- To evaluate the effectiveness and the impact of medication reconciliation interventions, we require a clear, consistent and sensitive measure.
- Medication discrepancies across transitions of care are the sole quantitative measure related to the medication reconciliation process.
- We suggested that clear and consistent information on prevalence, types, causes and contributing factors of medication discrepancy is required to develop suitable strategies to reduce the risk of their adverse consequences on patient safety.
- To obtain that information, we need a well-designed taxonomy to report, classify and understand the medication discrepancies accurately and to be applied in clinical practise.

Thank you!!

Supplementary Materials

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Part 1: Validity of the operational definitions

Part 1: Assessing the validity of the operational definitions

The process of medication reconciliation has been recommended by different national and international organizations to improve patient safety at transition points of care. It is based on: gathering a gold standard medication list, by using a number of different sources of information; comparing the gold standard list with the current medication regimen at the point of transition; identifying discussing and clarifying any discrepancies with the responsible healthcare provider; and transferring any medication changes to the patient and next healthcare providers. Our recent review found that despite general agreement on the steps of conducting the medication reconciliation, there is significant inconsistency in the definitions of general terms related to the process of "medication reconciliation" itself.

In this survey, you will be asked to evaluate the (face and content) validity of four different operational definitions related to our medication discrepancy classification system: medication reconciliation, medication discrepancy, transition of care, and gold standard medication list (best possible medication list).

Our operational definitions of these terms are reported below. Two criteria are used to assess the validity of these definitions: 1) clarity (extent to which the definition is precise and accurate); and 2) comprehensiveness (extent to which the definition is complete). If you rate any item as (Strongly disagree, Disagree or Neither agree nor disagree), we would like you to record your reason for the rating, in the comments section below the item. If you would like to add, delete or modify any item, please record your suggestions in the comments section below the item.

If you would like to clarify any definition or item, prior to rating it, please contact Enas Almanasreh via mobile (0450 416 782) or email (enas.almanasreh@sydney.edu.au).

Definition of Transition of care: Transfer of responsibility of the patient's healthcare between different locations or settings, healthcare professionals, healthcare services or within the same setting but between different departments. It may also involve any changes or additions to healthcare services provided to the patient (e.g medication management in the community setting).

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Definition is clear	○	○	○	○	○
Definition is comprehensive	○	○	○	○	○

Please comment if you selected (Strongly disagree, Disagree or neither agree nor disagree)

Part 2: Validity of the types of medication discrepancy

Part 2: Assessing the validity of the types of medication discrepancy

In this section, you will be asked to provide your rating for 13 major categories and 28 subcategories of medication discrepancies. Each category and subcategory is rated on a scale from 1 to 5 for the (representativeness, clarity of the name, clarity of the definition and uniqueness). Representativeness is demonstrated by the category's ability to represent a type of medication discrepancy identified following the medication reconciliation process. The clarity of the name of category is evaluated on the basis of how clearly a category is worded. Clarity of the definition is assessed based on understanding the explicit definition of the category (ie extent to which the category's definition is precise and accurate). The uniqueness refers to the chance that the category can be interpreted in different ways.

For each medication discrepancy category, you will be given a definition for each category, solved worked-examples and rating scales.

In each example, we assume that the gold standard medication list has been compiled by using a number of different sources of information and is being compared with a list of newly prescribed medications (named as the "Test list").

Test list (study list): The list of medications which we are interested in checking for accuracy and completeness (list of interest).

1. **Omission:**

Definition: The drug is listed on the Gold standard list but not listed on the Test list.

Gold standard list:	**Test List:**
Lasix furosemide 40mg orally BID	.....
Tritace Ramipril 1.25mg orally 1 D	Tritace Ramipril 1.25mg orally 1 D
Plavix Clopidogrel 75mg orally 1 M	Plavix Clopidogrel 75mg orally 1 M

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Category represents a type of medication discrepancy	○	○	○	○	○
Name of category is clear	○	○	○	○	○
Definition of category is clear	○	○	○	○	○
Category is unique and is unlikely to be misinterpreted	○	○	○	○	○

Please comment if you selected (Strongly disagree, Disagree or Neither agree nor disagree)

Part 3: Validity of the whole instrument

Part 3: Assessing the whole instrument " medication discrepancy classification system"

Two criteria are used to assess the content validity of the whole instrument: 1) comprehensiveness (extent to which the instrument is complete and the categories are properly understood and 2) usefulness (extent to which the instrument is important/helpful/needed.

Comprehensiveness of the whole instrument:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
The instrument is complete and properly understood (comprehensive)	◯	◯	◯	◯	◯
The instrument is useful	◯	◯	◯	◯	◯

Please comment if you selected (Strongly disagree, Disagree or Neither agree nor disagree)

Table 1: Summary of included studies (n=95), the studies were stratified by transition points and date of publication.

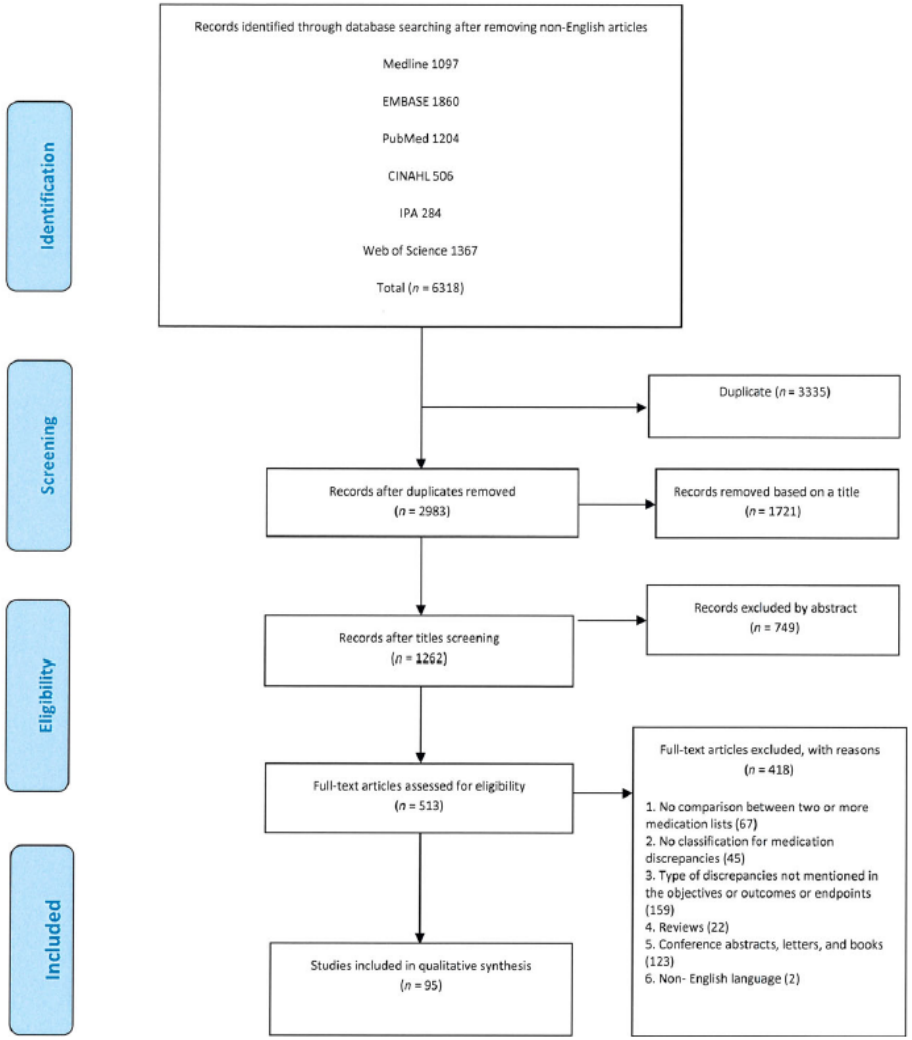
Study/Year	Setting	Study design	Person performing medication reconciliation	Source of medication list	Intervention	Objective /Outcomes or Endpoints	Method of classification	Intentional / unintentional discrepancy	Results
Admission transition point									
Lenssen et al 2016	Hospital University Hospital Germany	Prospective study	Pharmacy	1. Basic medication history collected by the physician or nurse 2. Extended medication history conducted by the pharmacist	1. Extended medication history 2. Medication reconciliation 3. Medication safety checks	To investigate the need for pharmaceutical care implementation in different clinical departments regarding number, type and occurrence of drug-related problem DRP. Risk factors for DRP were analysed.	By using the APS-Doc system and adding 2 subcategories O3 (information requirement of patient) and O4 (information requirement of physician /nurse) to the main category Others.	Yes	A total of 306 patients received the pharmaceutical care service. On average, more than two DRPs per patient (n = 702; mean: 2.3 DRPs/patient, median: 2 DRPs/patient; min: 0, max: 11 DRPs/patient) were identified for all the participants. DRPs were found in each category of the APS-Doc system. The most pronounced drug-related problems found were drug–drug interactions (34.6 %). 37 % of the identified drug-related problems occurred before hospital admission, 27 % during transitional care, and 36 % on the ward.
Baena Parejo et al 2015	Hospital Emergency Department ED- 11 General Hospitals Spain	Cross-sectional descriptive observational study	Pharmacy	1. Pharmacist-obtained medication lists (PML) i. Interview with the patient or the caregiver ii. Previous clinical reports iii. The ED clinical history iv. Patients' family doctors 2. Medication history in the Emergency department chart (EDML)	Medication reconciliation	To determine the prevalence of patients with discrepancies between the medical list information contained in the clinical history compiled on admission to the emergency department ED and the list of medications patients are actually taking, to characterize the discrepancies found, and to analyze whether certain factors are associated with the risk of discrepancies.	Empirical Type of discrepancy: 1. Incomplete 2. Omission 3. Commission 4. Dosage discrepancy 5. Different drug 6. Wrong drug	No	387 patients from 11 general hospitals were involved in this study. The overall prevalence of patients with discrepancies was 79.3% (range 56.8–97.3%). A total of 1476 discrepancies were detected in the 387 patients (3.8 discrepancies per patient). No discrepancies were found in 20.7% of the patients. More than four discrepancies were found in 54.8% of patients, and more than eight discrepancies were found in 20.3%. The most frequent types of discrepancies were incomplete information (44.2%) and omission (41.8%).
Hart et al 2015	Hospital Emergency Department ED- Community Hospital USA	Prospective cohort, Pre-post study	Pharmacy (Trained)	1. Comprehensive medication history obtained by the pharmacy technician i. Interview with the patient and /or caregivers ii. Patient's pharmacy iii. Physician's office iv. Nursing home 2. Nurse-obtained medication history (control group) 3. Electronic prescriptions generated by the health care system and physician notations	Pharmacy-technician-based medication reconciliation program	To evaluate the percentage, frequency, and types of medication history errors made by pharmacy technicians compared with nurses in the emergency department (ED) to determine if patient safety and care can be improved while reducing nurses' workloads.	Empirical Medication history errors: 1. Incorrect/missing dose 2. Incorrect/missing frequency 3. Drug commission 4. Incorrect drug 5. Drug omission	No	A total of 300 medication histories from the ED were evaluated (150 in each group). Medication histories conducted by pharmacy technicians were accurate 88% of the time compared with 57% of those conducted by nurses. Nineteen errors (1.1%) were made by pharmacy technicians versus 117 (8.3%) by nurses. The most common type of error was an incorrect or missing dose (10 versus 59), followed by an incorrect or missing frequency (0 versus 30) and a drug commission (5 versus 23).

Table 1

Availability of standard list, method of classification and the number of components in the classification of included studies ($n = 95$); the studies were stratified by transition points and date of publication

Study/year	Setting	Person performing medication reconciliation	Availability of Gold standard list - BPMH/number of sources*	How derived†	Number of discrepancy categories‡	Number and types of other categories
Admission transition point						
Lenssen *et al.* [44]	University hospital Germany	Pharmacy	Unclear	Existing classification –APS-Doc	10MC, 50SC	Pharmaceutical intervention: 3C
Baena Parejo *et al.* [74]	Emergency Department (ED)/ 11 General Hospitals Spain	Pharmacy	Unclear	Empirically derived	6C	NA
Hart *et al.* [75]	Emergency department/ Community hospital USA	Pharmacy (Trained)	Yes, 4	Empirically derived	5C	NA
Heath *et al.* [76]	Inpatient paediatric units/ Tertiary hospital USA	Pharmacy	Unclear	Empirically derived	5C	NA
Nash *et al.* [77]	Tertiary-level maternity hospital Australia	Pharmacy	Yes, 1	Empirically derived	4C	NA
Perehudoff *et al.* [78]	University hospital Belgium	Pharmacy	Yes, 3	Empirically derived	5MC, 9SC	NA
Procopio *et al.* [79]	Emergency department/University medical centre USA	Pharmacy (Trained)	Yes, 2	Empirically derived	3MC, 5SC	
Aag *et al.* [80]	Department of Cardiology at University hospital Norway	Pharmacy and Nurse (Trained)	Yes, 5	Other classification	7C	NA
Taylor *et al.* [81]	Emergency departments in public hospitals Australia	Pharmacy	Yes, 5	Empirically derived	8C	NA
Andreoli *et al.* [47]	Internal medicine Unit France	Pharmacy (Trained)	Yes, 7	Empirically derived	2MC, 4SC	NA
Azzi *et al.* [82]	Diabetes ambulatory care centre Australia	Unclear	Yes, 3	Empirically derived	4C	NA
Brownlie *et al.* [64]	In patient mental health services UK	Pharmacy	Unclear	Other classification	11C	NA
Hohn *et al.* [57]	Tertiary care hospital Germany	Pharmacy (Trained)	Yes, 4	Empirically derived	3MC, 7SC	NA
Lancaster and Grgurich [83]	Inpatient internal medicine unit/Tertiary hospital USA	Pharmacy (Trained)	Yes, 3	Empirically derived	5C	NA
Rubio *et al.* [84]	University Hospital Spain	Pharmacy	Unclear	Other classification	3MC, 12SC	NA
Urban *et al.* [35]	Four acute hospitals UK	Pharmacy	Unclear	Other classification	1SC	NA
Buckley *et al.* [48]	Teaching medical institute USA	Pharmacy (Trained)	Unclear	Other classification	5C	Causes of medication error: 6C
Becerra-Camargo *et al.* [22]	3 Large teaching hospital Colombia	Pharmacy and Doctor (Trained)	Yes, 4	Empirically derived	8C	NA
Rodriguez Vargas *et al.* [49]	Tertiary care hospital Spain	Pharmacy	Unclear	Other classification	6C	NA
Hohmann *et al.* [24]	Hospital Germany	Pharmacy	Unclear	Existing classification -APS-Doc	10MC, 48SC	Pharmaceutical intervention: 3C
Zoni *et al.* [85]	Internal medicine department/University Hospital Spain	Pharmacy	Yes, 2	Other classification	2MC, 8SC	NA
Hellstrom *et al.* [50]	Internal medicine wards/University Hospital Sweden	Pharmacy	Yes, 4	Empirically derived	5C	NA
Beckett *et al.* [51]	General medicine and general surgery/ Geriatric hospital USA	Pharmacy (Trained)	Unclear	Empirically derived	6C	NA
Richards *et al.* [60]	Hospital UK	Pharmacy	Unclear	Empirically derived	8C	NA
Gimenez Manzorro *et al.* [86]	General surgery and Internal medicine department/ Tertiary hospital Spain	Pharmacy	Yes, 2	Other classification	3MC, 9SC	NA
Villanyi *et al.* [87]	General hospital Canada	Unclear	Yes, 4	Other classification	3MC, 3SC	NA
Stone *et al.* [38]	Tertiary care children's hospital USA	Pharmacy	Yes, 5	Empirically derived	5C	NA
Gleason *et al.* [52]	Hospital USA	Pharmacy	Yes, 7	Empirically derived	4C	NA
Kemp *et al.* [88]	Two hospices USA	Pharmacy	Unclear	Empirically derived	7C	NA

(*continues*)



1. Almanasreh, Enas, et al. “The medication reconciliation process and classification of discrepancies: a systematic review." British journal of clinical pharmacology 82.3 (2016): 645-658.

Systematic review of the literature (continue)

- **Exclusion criteria:**

1. Non- English language studies
2. Systematic review and meta-analysis, guidelines, conference abstracts, books, and letters.

- We have no restrictions on time, design, and setting of the studies.

- All relevant data related to the classification of medication discrepancies were extracted and were used to inform the design of a comprehensive taxonomy.

1. Almanasreh, Enas, et al. "The medication reconciliation process and classification of discrepancies: a systematic review." British journal of clinical pharmacology 82.3 (2016): 645-658.

A. Content Validity- Content Validity Scale

- The scale consists of:

1. Instructions for experts
2. Participant Information Statement (Ethical approval)
3. Hierarchy presentation of the Medication discrepancy Classification system
4. Part 1: Validity of the operational definitions
5. Part2: Validity of the types of medication discrepancy
6. Part 3: Validity of the whole instrument

Content validity scale

- Two criteria are used to assess the validity of some operational definitions related to the classification system:

1. Clarity (extent to which the definition is precise and accurate)

2. Comprehensiveness (extent to which the definition is complete)

Part 2: Validity of the types of medication discrepancy

- Four criteria are used to evaluate the content validity for the medication discrepancy classification:

1. Representativeness (demonstrated by the category's ability to represent a type of medication discrepancy)

2. Clarity of the name of category (how clearly a category is worded)

3. Clarity of the definition (extent to which the Instructions for experts category's definition is precise and accurate)

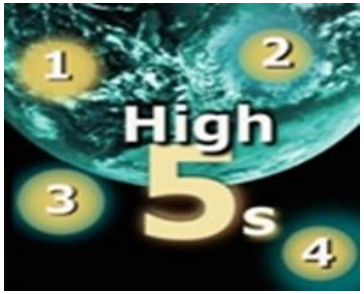
4. Uniqueness (the chance that the category can be interpreted in different ways)

Part 3: Validity of the whole instrument

- Two criteria are used to assess the content validity of the whole instrument:

1. Comprehensiveness (extent to which the instrument is complete and the categories are properly understood)

2. Usefulness (extent to which the instrument is important/helpful/needed)



Medication reconciliation is a formal process in which healthcare professionals partner with patients to ensure accurate and complete medication information transfer at interfaces of care. It involves a systematic process for obtaining a medication history, and then comparing that information to medication orders at transitions in order to identify and resolve discrepancies, with the purpose of preventing adverse drug events.

http://www.who.int/patientsafety/implementation/solutions/high5s/h5s-sop.pdf?ua

Medication Reconciliation Definition

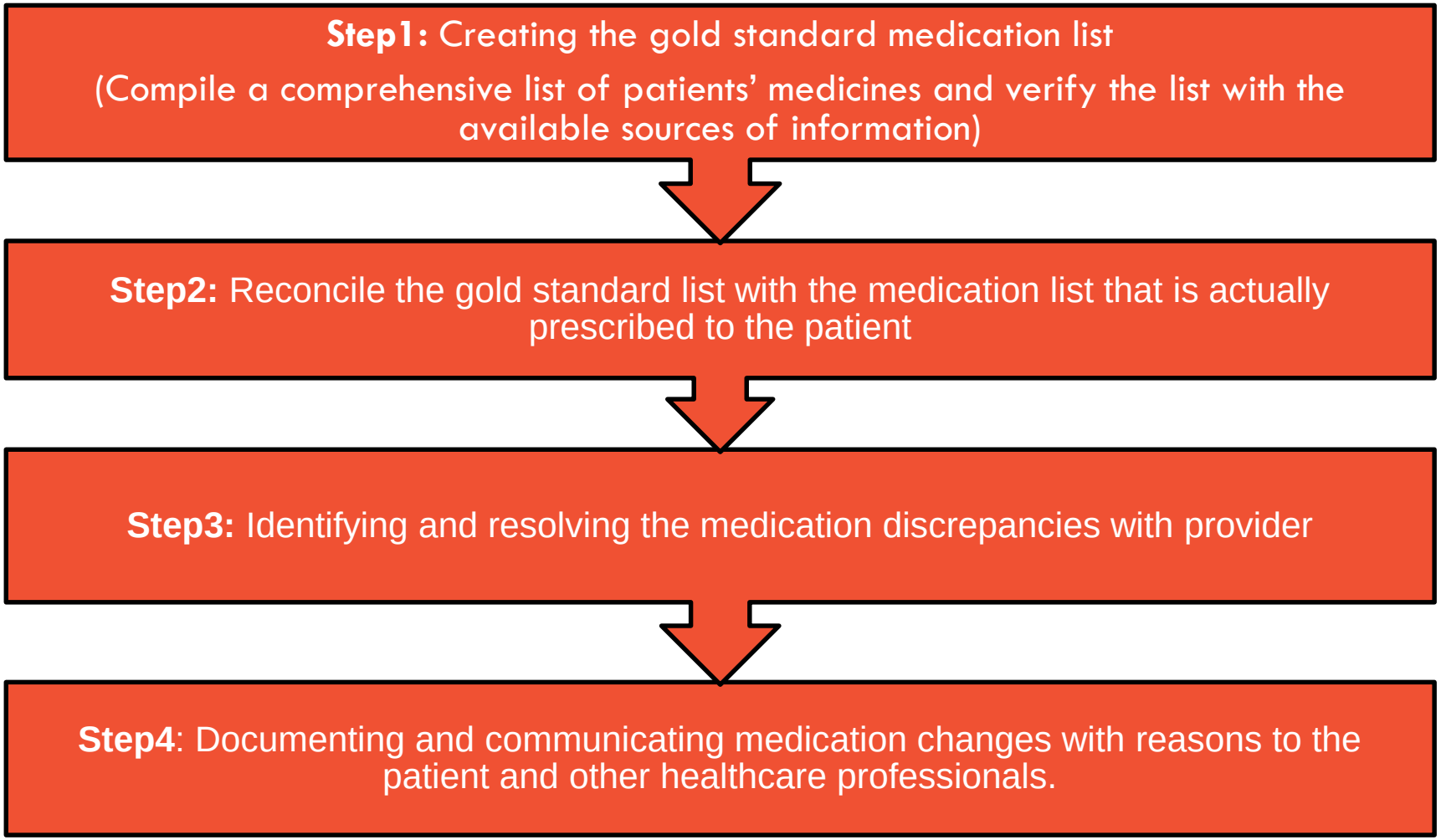
AUSTRALIAN COMMISSION ON SAFETY AND QUALITY IN HEALTH CARE

shpa The Society of Hospital Pharmacists of Australia

Medication reconciliation is a formal process of obtaining and verifying a complete and accurate list of each **patient's current medicines** matching the medicines the patient **should be prescribed** to those they are **actually prescribed.**

1. **http://www.safetyandquality.gov.au/our-work/medication-safety/medication-reconciliation/**
2. **http://www.shpa.org.au/lib/pdf/positionstatement/Medicines_In_Focus_Med_Rec_Background_Nov2012.pdf**

Medication reconciliation process



http://www.who.int/patientsafety/implementation/solutions/high5s/h5s-sop.pdf

https://www.safetyandquality.gov.au/our-work/medication-safety/medication-reconciliation/

Development of a Medication Discrepancy Classification System to Evaluate the Process of Medication Reconciliation

Systematic review of the literature (continue)

Strengths and limitations:

- **Limitations:**
- ✓ We included only English-language studies and we did not include unpublished studies.
- ✓ No quality assessment of the studies.

- **Strengths:**
- ✓ Comprehensive and broad search strategy
- ✓ Number of included studies was high
- ✓ The question of this review has important contribution in patient health and safety

B. Reliability Testing

- To confirm the test-re-test reliability of the instrument.
- Participants will include pharmacists (n=6) involved in the medication reconciliation process at care transitions.
- 10 fictitious cases will be used.
- Fleiss Kappa will be computed.

Summary and Conclusion

- Although the concept of Medication reconciliation is relatively straightforward, we found significant inconsistencies in the operational definition and application of the process in reviewed studies.

- We believe that a well-designed comprehensive taxonomy for medication discrepancies is critical for systematically evaluating and comparing different medication reconciliation services.