29.1.2021

Report

Online international validation second round coding of upgraded PCNE DRP cases using PCNE DRP Classification V9.1

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Introduction

After upgrade of the PCNE set of DRP cases at the Heidelberg meeting, the 2nd round of expert coding took place in January 2018. Fifteen experts were invited to complete the online survey with 18 DRP cases, coding Problems and Causes. They used the PCNE classification V 8.02. Nine experts answered the survey completely (9/15 = 60 % response rate). The results were analysed and presented to the members of the working group at the 2019 Working Conference in Egmond aan Zee. The classification and its validation were discussed again, resulting in some changes and V9.0. This version went into an international validation round 1, where 20-30 pharmacists per country coded 20 slightly modified DRP cases. Pharmacists coded Problem(s), Cause(s) and Planned intervention(s). The results were analysed and a number of issues became apparent. These issues were discussed with pharmaceutical care experts during the Working Symposium 2020 in Egmond aan Zee. It was concluded that these issues were caused by both the classification and the cases. In March and April 2020, the working group adapted the classification based on the results of the discussions in Egmond, resulting in version 9.1. The cases were also adapted, resulting in a new Cases Set 2020. Both went into an international validation round 2. Again, 20-30 pharmacists per country coded Problem(s), Cause(s) and Planned intervention(s) using Cases set 2020.

Results are shown on the following pages. Each case is followed by the number of DRPs recognized, Problems (P-codes), Causes (C-codes) and Planned Interventions (I-codes) codes used. The frequencies as well as the percentages of pharmacists who used the same code is shown. Due to a large variation in C- and I-codes used, only the codes with frequency greater than 10 are shown. Consistency in coding above 80 % is considered satisfactory and is shown in green.

Response

Data collection took place from 9. 11. 2020 to 19. 1. 2021. There were 160 completed questionnaires.

Response rate (?) Base: Entered intro

Status	Frequency	State
Entered intro	681	100%
Entered first page	377	55%
Started responding	311	46%
Partially completed	300	44%
Completed	160	23%
Unit usability (50%/80%)		
Usable units	160	100%
Partially usable units		0%
Unusable units		0%
Breakoffs		
Introductory breakoffs	359	53%
Questionnaire breakoffs	150	22% (neto 47%)
Total breakoffs	509	75%

Terms explanation

Entered intro: each click to the survey is counted, irrespective of whether the survey was completed in full or if the respondent left the survey immediately after clicking on the URL.
Entered first page: each respondent that clicked on 'Next page' is counted.
Partially completed: each respondent that answered at least one question is counted.
Completed the survey: each respondent that answered clicked on the 'End' button on the last page of the survey is counted.

Unit usability:
Usable units: questionnaires where the respondent answered more than 80% of the responses
Partially usable units: questionnaires with 50%-80% of usable responses.
Unusable units: questionnaires with less than 50% of usable responses (but at least 1 question answered)
Usable units + partially usable units + unusable units = partially completed questionnaires = valid questionnaires.

Breakoffs:
The respondent stopped answering the questions and left the survey at a certain point.
Introductory breakoffs: breakoff after reading introduction
Questionnaire breakoffs: breakoffs during filling the questionnaire
Total breakoffs: sum of the above

Country of practice/work

Country	Frequency valid	Percentage valid	Frequency completed	Percentage completed
China	27	9%	15	9%
Croatia	18	6%	14	9%
Georgia	1	0%	1	1%
Germany	23	8%	11	7%
Norway	32	11%	26	16%
Poland	19	6%	10	6%
Slovenia	22	7%	15	9%
Spain	79	27%	12	8%
Switzerland	39	13%	31	20%
Turkey	33	11%	23	15%
India	1	0%	0	0%
Costa Rica	1	0%	0	0%
TOTAL	**295**		**158**	

Language version of the PCNE-DRP-Classification used

Language	Frequency valid	Percentage valid	Frequency valid	Percentage valid
Chinese (Mandarin)	18	6%	9	6%
Chinese (traditional)	2	1%	0	0%
English	151	51%	110	70%
German	11	4%	5	3%
Serbian	5	2%	4	3%
Slovenian	6	2%	2	1%
Spanish	74	25%	9	6%
Turkish	28	9%	19	12%
TOTAL	**295**		**158**	

Terms explanation

Valid: respondents who answered at least one question.
Completed: respondents who finished the survey.

Case 1

Mrs. A, 87 years old, has been taking digoxin 0.25 mg daily for her atrial fibrillation for 3 years. She is really getting old and smaller by the day now. It is a Saturday morning and she presents a new prescription for digoxin 0.25mg. While the pharmacist prepares the prescription, she tells him that she is recently suffering from strange visions and wonders if she needs her glasses replaced. The pharmacist recognises the possible side-effect of the digoxin and tells her not to take the digoxin for one day and to go to the GP on Monday and present her complaints. She promises to do so.

Number of DRPs recognised in this case, n=214

Number of DRPs	Frequency	Percentage
1	189	88 %
2	24	11 %
3	1	0 %

The Problems codes (P-codes), n=212

P-code	Frequency (potential/manifest)	Percentage
P2.1 Adverse drug event (possibly) occurring	208 (30/178)	98 %
P1.2 Effect of drug treatment not optimal	8 (2/6)	4 %
P3.2 Unclear problem/complaint. Further clarification necessary (please use as escape only): readjust doses, tdm	2 (2/0)	1 %
P1.3 Untreated symptoms or indication	1 (0/0)	0,5%

The Causes codes (C-codes), n=212

C-code	Frequency	Percentage
C3.2 Drug dose of a single active ingredient too high	161	76 %
C1.1 Inappropriate drug according to guidelines/formulary	34	16 %
C3.4 Dosage regimen too frequent	23	11 %
C9.1 No or inappropriate outcome monitoring (incl. TDM)	23	11 %
C4.2 Duration of treatment too long	20	9 %

The Planned Interventions codes (I-codes), n=213

I-code	Frequency	Percentage
I2.3 Patient referred to prescriber	145	68 %
I3.5 Drug paused or stopped	78	37 %
I2.1 Patient (drug) counselling	46	22 %
I1.3 Intervention proposed to prescriber	43	20 %
I1.4 Intervention discussed with prescriber	15	7 %
I3.2 Dosage changed	15	7 %

Case 2

Mr. B, 45 years old and a regular patient, comes wheezing into the pharmacy and tells the pharmacist that those symptoms started again a couple of weeks ago. He is using his metoprolol also for a couple of weeks now and presents a new prescription for a salmeterol aerosol. He already uses beclomethasone via inhaler, 100mcg twice a day. It is clear that he suffers from an increase of his asthma symptoms and the pharmacist considers that the prescription of the metoprolol must be reviewed. He phones the GP, and together they decide to switch to an angiotensin II receptor blocker for the hypertension.

Number of DRPs recognised in this case, n=189

Number of DRPs	Frequency	Percentage
1	145	77 %
2	43	23 %
3	1	0,5 %

The Problems codes (P-codes), n=191

P-code	Frequency (potential/manifest)	Percentage
P2.1 Adverse drug event (possibly) occurring	150 (22/128)	79 %
P1.2 Effect of drug treatment not optimal	56 (12/48)	29 %
P1.1 No effect of drug treatment despite correct use	20 (3/17)	10 %
P1.3 Untreated symptoms or indication	2 (1/1)	2 %
P3.2 Unclear problem/complaint. Further clarification necessary (please use as escape only)	2 (0/0)	1 %
P3.1 Unnecessary drug-treatment	1 (1/0)	0,5 %

The Causes codes (C-codes), n=191

C-code	Frequency	Percentage
C1.1 Inappropriate drug according to guidelines/formulary	120	63 %
C1.3 Inappropriate combination of drugs or drugs and herbal medication or drugs and dietary supplements	74	39 %

The Planned Interventions codes (I-codes), n=190

I-code	Frequency	Percentage
I1.4 Intervention discussed with prescriber	148	78 %
I3.1 Drug changed	77	41 %
I1.3 Intervention proposed to prescriber	43	23 %

Case 3

Ms. C has asthma and is being prescribed inhaled beclomethasone 100mcg twice a day for 5 months now but is not taking it regularly. She increasingly needs her beta-2 agonist, especially at 5 in the morning when she wakes up because of her asthma. The pharmacist suggests that she should take the corticosteroid every day and explains why. She admits that the GP has said the same, but that she does not like taking corticosteroids because they make you fat. The pharmacist convinces her of the necessity of using it regularly twice a day, and she says that she will do so.

Number of DRPs recognised in this case, n=182

Number of DRPs	Frequency	Percentage
1	157	86 %
2	25	14 %

The Problems codes (P-codes), n=184

P-code	Frequency (potential/manifest)	Percentage
P1.2 Effect of drug treatment not optimal	140 (6/134)	76 %
P1.3 Untreated symptoms or indication	31 (5/27)	17 %
P3.2 Unclear problem/complaint. Further clarification necessary (please use as escape only): nonadherence	10 (2/8)	5 %
P2.1 Adverse drug event (possibly) occurring	6 (4/2)	3 %
P1.1 No effect of drug treatment despite correct use	5 (1/5)	3 %
P3.1 Unnecessary drug-treatment	2 (0/2)	1 %

The Causes codes (C-codes), n=182

C-code	Frequency	Percentage
C7.1 Patient intentionally uses/takes less drug than prescribed or does not take the drug at all for whatever reason	174	96 %

The Planned Interventions codes (I-codes), n=184

I-code	Frequency	Percentage
I2.1 Patient (drug) counselling	179	97 %
I2.2 Written information provided (only)	11	6 %

Case 4

During a medication review for an elderly person, Mrs. D, the pharmacist notes that she has been prescribed paracetamol (2g/day) by one doctor and Tramacet© (paracetamol 325 mg plus tramadol 37.5 mg) 4 times a day, by another doctor. The pharmacist discovers the duplication of active ingredients, contacts the patient and tells her to stop one of the two analgesics and to contact her GP. The patient answers that she will contact her GP but is not yet inclined to stop either medication.

Number of DRPs recognised in this case, n=178

Number of DRPs	Frequency	Percentage
1	136	76 %
2	42	24 %

The Problems codes (P-codes), n=178

P-code	Frequency (potential/manifest)	Percentage
P2.1 Adverse drug event (possibly) occurring	143 (134/8)	80 %
P3.1 Unnecessary drug-treatment	39 (22/18)	22 %
P1.2 Effect of drug treatment not optimal	9 (6/2)	5 %
P3.2 Unclear problem/complaint. Further clarification necessary (please use as escape only): The total amount paracetamol is 3,3g/daily. Not too much in all cases.	3 (2/1)	2 %

The Causes codes (C-codes), n=178

C-code	Frequency	Percentage
C1.4 Inappropriate duplication of therapeutic group or active ingredient	151	85 %
C3.2 Drug dose of a single active ingredient too high	24	13 %
C7.4 Patient decides to use unnecessary drug	22	12 %
C1.3 Inappropriate combination of drugs or drugs and herbal medication or drugs and dietary supplements	15	8 %
C8.1 Medication reconciliation problem	15	8 %

The Planned Interventions codes (I-codes), n=178

I-code	Frequency	Percentage
I2.3 Patient referred to prescriber	132	74 %
I2.1 Patient (drug) counselling	105	59 %
I3.5 Drug paused or stopped	44	25 %
I1.3 Intervention proposed to prescriber	21	12 %

Case 5

During a medication review, requested by Mrs. E (40 years old), she mentions that she feels a bit dizzy at times. This has been a problem for some weeks now and she thinks it is because of her medications. She started taking amitriptyline and nitrofurantoin 50 mg daily some weeks ago. The pharmacist suspects that the amitriptyline causes the drowsiness as a side effect and convinces her to go to the GP and discuss the problem.

Number of DRPs recognised in this case, n=171

Number of DRPs	Frequency	Percentage
1	161	94 %
2	10	6 %

The Problems codes (P-codes), n=170

P-code	Frequency (potential/manifest)	Percentage
P2.1 Adverse drug event (possibly) occurring	168 (30/137)	99 %
P1.2 Effect of drug treatment not optimal	4 (2/2)	2 %
P3.1 Unnecessary drug-treatment	2 (1/1)	1 %
P1.3 Untreated symptoms or indication	1 (0/1)	0,5 %
P3.2 Unclear problem/complaint. Further clarification necessary (please use as escape only)	1 (0/1)	0,5 %

The Causes codes (C-codes), n=167

C-code	Frequency	Percentage
C1.1 Inappropriate drug according to guidelines/formulary	49	29 %
C9.3 No obvious cause	32	19 %
C9.2 Other cause; specify: side effect	30	18 %
C3.2 Drug dose of a single active ingredient too high	27	16 %
C1.3 Inappropriate combination of drugs or drugs and herbal medication or drugs and dietary supplements	14	8 %

The Planned Interventions codes (I-codes), n=171

I-code	Frequency	Percentage
I2.3 Patient referred to prescriber	138	81 %
I2.1 Patient (drug) counselling	31	18 %
I1.3 Intervention proposed to prescriber	14	8 %

Case 6

Mr. F, a 68-year-old male, arrives complaining of dizziness. It has been particularly noticeable for 1 – 2 days now. All he takes is a cough mixture (three times a day 30ml). The pharmacist suspects that the alcohol content, although low, of the mixture gives problems, and suggests to him to use a mixture without alcohol content. He agrees to replace the mixture.

Number of DRPs recognised in this case, n=167

Number of DRPs	Frequency	Percentage
1	206	95 %
2	11	5 %
3	1	1 %

The Problems codes (P-codes), n=168

P-code	Frequency (potential/manifest)	Percentage
P2.1 Adverse drug event (possibly) occurring	163 (24/138)	97 %
P1.2 Effect of drug treatment not optimal	5 (3/2)	3 %
P3.2 Unclear problem/complaint. Further clarification necessary (please use as escape only): unknown cause of cough	4 (2/1)	2 %
P3.1 Unnecessary drug-treatment	1 (0/1)	0,5 %

The Causes codes (C-codes), n=166

C-code	Frequency	Percentage
C2.1 Inappropriate drug form/formulation (for this patient)	92	55 %
C1.1 Inappropriate drug according to guidelines/formulary	36	22 %
C9.2 Other cause; specify: side effect, reaction to alcohol, reaction to an additive	17	10 %
C1.3 Inappropriate combination of drugs or drugs and herbal medication or drugs and dietary supplements	14	8 %

The Planned Interventions codes (I-codes), n=168

I-code	Frequency	Percentage
I2.1 Patient (drug) counselling	100	60 %
I3.3 Formulation changed	70	42 %
I3.1 Drug changed	46	27 %

Case 7

An elderly person, Mr. G. wishes to buy ibuprofen OTC because he has painful joints. Since 6 months he has been taking warfarin 2 mg and digoxin 0.0625mg. The pharmacist suggests the use of paracetamol. The patient agrees but will also go to the GP to discuss the issue.

Number of DRPs recognised in this case, n=165

Number of DRPs	Frequency	Percentage
1	143	87 %
2	20	12 %
3	2	1 %

The Problems codes (P-codes), n=164

P-code	Frequency (potential/manifest)	Percentage
P2.1 Adverse drug event (possibly) occurring	150 (145/5)	91 %
P1.2 Effect of drug treatment not optimal	9 (9/0)	5 %
P1.3 Untreated symptoms or indication	6 (2/4)	4 %
P3.2 Unclear problem/complaint. Further clarification necessary (please use as escape only): drug-drug interaction	4 (4/0)	2 %

The Causes codes (C-codes), n=165

C-code	Frequency	Percentage
C1.3 Inappropriate combination of drugs or drugs and herbal medication or drugs and dietary supplements	128	78 %
C1.1 Inappropriate drug according to guidelines/formulary	53	32 %

The Planned Interventions codes (I-codes), n=164

I-code	Frequency	Percentage
I2.1 Patient (drug) counselling	126	77 %
I3.1 Drug changed	82	50 %
I2.3 Patient referred to prescriber	34	21 %

Case 8

Mrs. S. is a 73-year-old patient with uncontrolled hypertension. Her blood pressure medication has been changed a lot in the past, but her blood pressure is still not under control. Her GP asks for a medication review in the pharmacy. While discussing her medication she tells the pharmacist, that she takes all her medication out of the blister and puts it in a pill box with a clear lid. The pharmacist asks where she stores the box and she states that it sits on the windowsill in the living room. The pharmacist tells Mrs. S. that she takes 3 antihypertensive drugs that are very sensitive to light and counsels her about the correct storage of her medication. She agrees to keep her medication in the blister.

Number of DRPs recognised in this case, n=165

Number of DRPs	Frequency	Percentage
1	147	89 %
2	14	8 %
3	4	2 %

The Problems codes (P-codes), n=165

P-code	Frequency (potential/manifest)	Percentage
P1.2 Effect of drug treatment not optimal	121 (9/116)	73 %
P1.1 No effect of drug treatment despite correct use	41 (9/36)	25 %
P2.1 Adverse drug event (possibly) occurring	7 (5/2)	4 %
P3.2 Unclear problem/complaint. Further clarification necessary (please use as escape only)	5 (1/5)	3 %
P1.3 Untreated symptoms or indication	4 (0/4)	2 %

The Causes codes (C-codes), n=165

C-code	Frequency	Percentage
C7.6 Patient stores drug inappropriately	157	95 %

The Planned Interventions codes (I-codes), n=165

I-code	Frequency	Percentage
I2.1 Patient (drug) counselling	157	95 %
I3.4 Instructions for use changed	15	9 %

Case 9

Mr. I comes into the pharmacy and would like something for a sore throat. He complains of a very sore, burning sensation at the base of his throat which occasionally poses problems and he thinks it is some viral infection. The only medicine he has taken recently was a NSAID, which he takes for his painful legs, before going to sleep. The pharmacist suspects local inflammation because of the NSAID getting stuck in his throat and explains to him that he should take the NSAID while sitting or standing up with a lot of water, after dinner preferably. He will try this.

Number of DRPs recognised in this case, n=164

Number of DRPs	Frequency	Percentage
1	153	93 %
2	10	6 %
3	1	0,5%

The Problems codes (P-codes), n=164

P-code	Frequency (potential/manifest)	Percentage
P2.1 Adverse drug event (possibly) occurring	153 (24/128)	93 %
P1.3 Untreated symptoms or indication	9 (4/5)	5 %
P1.2 Effect of drug treatment not optimal	8 (3/5)	5 %
P3.2 Unclear problem/complaint. Further clarification necessary (please use as escape only): wrong way to use	5 (0/5)	3 %
P1.1 No effect of drug treatment despite correct use	1 (0/1)	0,5 %

The Causes codes (C-codes), n=163

C-code	Frequency	Percentage
C7.8 Patient unintentionally administers/uses the drug in a wrong way	137	84 %
C7.7 Inappropriate timing or dosing intervals	17	10 %

The Planned Interventions codes (I-codes), n=164

I-code	Frequency	Percentage
I2.1 Patient (drug) counselling	152	93 %
I3.4 Instructions for use changed	48	29 %

Case 10

Mrs. J has been prescribed pantoprazole 40mg twice a day for 2 years. From the Drug Utilisation Evaluation (DUE) the pharmacist sees that she had a successful eradication therapy 4 months ago and therefore she should not need the pantoprazole anymore. The pharmacist contacts the GP to suggest reviewing treatment for her GI condition. The GP rejects the suggestion saying 'I just cannot force such people to stop their medication, although they indeed do not need it anymore'.

Number of DRPs recognised in this case, n=164

Number of DRPs	Frequency	Percentage
1	135	82 %
2	27	16 %
3	2	1 %

The Problems codes (P-codes), n=164

P-code	Frequency (potential/manifest)	Percentage
P3.1 Unnecessary drug-treatment	129 (47/82)	79 %
P2.1 Adverse drug event (possibly) occurring	40 (39/1)	24 %
P1.1 No effect of drug treatment despite correct use	5 (4/1)	3 %
P1.2 Effect of drug treatment not optimal	3 (3/2)	2 %
P1.3 Untreated symptoms or indication	2 (1/1)	1 %
P3.2 Unclear problem/complaint. Further clarification necessary (please use as escape only)	1 (0/1)	0,5 %

The Causes codes (C-codes), n=164

C-code	Frequency	Percentage
C4.2 Duration of treatment too long	96	59 %
C1.2 No indication for drug	86	52 %
C7.4 Patient decides to use unnecessary drug	16	10 %
C6.3 Drug over-administered by a health professional	11	7 %

The Planned Interventions codes (I-codes), n=164

I-code	Frequency	Percentage
I1.3 Intervention proposed to prescriber	111	68 %
I1.4 Intervention discussed with prescriber	55	34 %
I2.1 Patient (drug) counselling	22	13 %
I1.1 Prescriber informed only	12	7 %
I3.5 Drug paused or stopped	12	7 %

Case 11

Ms. K, 84 years old, arrives complaining of oral thrush. She is a chronic asthmatic using inhaled corticosteroids. The pharmacist checks her inhaler technique and notices that she does not inhale properly at all and does not swash her mouth after inhalation. The pharmacist gives her counselling on inhalation technique and tells her to wash her mouth with water after inhaling. She returns after a week and tells the pharmacist, that she followed his instructions and her thrush has disappeared.

Number of DRPs recognised in this case, n=163

Number of DRPs	Frequency	Percentage
1	135	83 %
2	28	17 %

The Problems codes (P-codes), n=163

P-code	Frequency (potential/manifest)	Percentage
P2.1 Adverse drug event (possibly) occurring	154 (4/150)	94 %
P1.2 Effect of drug treatment not optimal	31 (14/17)	19 %
P1.1 No effect of drug treatment despite correct use	2 (1/1)	1 %

The Causes codes (C-codes), n=163

C-code	Frequency	Percentage
C7.8 Patient unintentionally administers/uses the drug in a wrong way	154	94 %

The Planned Interventions codes (I-codes), n=162

I-code	Frequency	Percentage
I2.1 Patient (drug) counselling	157	97 %
I3.4 Instructions for use changed	40	25 %

Case 12

Ms. L, 74 years old, visits the pharmacy. She mentions that she has just been discharged from the Geriatrics department, with 'this paper' (but no verbal information). She shows the pharmacist the discharge medication list she received from the hospital and asks what she should do with the rest of the atorvastatin (Lipitor) 20 mg, which is no longer on the list. She is unsure whether she should stop taking atorvastatin 20 mg. Atorvastatin is indeed missing from the list, and no other statin seems to have been prescribed. The pharmacist decides to call the treating physician in the hospital for further information about the treatment plan. The physician confirms the omission and indicates that the patient should keep on taking the atorvastatin.

Number of DRPs recognised in this case, n=162

Number of DRPs	Frequency	Percentage
1	152	94 %
2	10	6 %

The Problems codes (P-codes), n=160

P-code	Frequency (potential/manifest)	Percentage
P1.3 Untreated symptoms or indication	127 (77/50)	79 %
P3.2 Unclear problem/complaint. Further clarification necessary (please use as escape only): discharge info missing, drug omission, medication reconciliation problem	30 (16/10)	19 %
P1.2 Effect of drug treatment not optimal	6 (2/4)	4 %
P1.1 No effect of drug treatment despite correct use	2 (1/1)	1 %
P2.1 Adverse drug event (possibly) occurring	1 (1/0)	0,5 %
P3.1 Unnecessary drug-treatment	1 (1/0)	0,5 %

The Causes codes (C-codes), n=162

C-code	Frequency	Percentage
C8.1 Medication reconciliation problem	93	57 %
C1.5 No or incomplete drug treatment in spite of existing indication	68	42 %
C5.2 Necessary information not provided or incorrect advice provided	11	7 %

The Planned Interventions codes (I-codes), n=162

I-code	Frequency	Percentage
I1.2 Prescriber asked for information	79	49 %
I1.4 Intervention discussed with prescriber	67	41 %
I3.6 Drug started	29	18 %
I1.3 Intervention proposed to prescriber	23	14 %
I2.1 Patient (drug) counselling	18	11 %

Case 13

Mr. M has been prescribed amoxicillin 500 mg, three times a day, for two days for a chest infection. The pharmacist phones the doctor because the pharmacist finds the duration of the course too short. The doctor says it was just a slip of the pen. It should be for 7 days.

Number of DRPs recognised in this case, n=161

Number of DRPs	Frequency	Percentage
1	160	99 %
2	1	0,5 %

The Problems codes (P-codes), n=161

P-code	Frequency (potential/manifest)	Percentage
P1.2 Effect of drug treatment not optimal	133 (96/36)	83 %
P1.1 No effect of drug treatment despite correct use	17 (17/1)	11 %
P1.3 Untreated symptoms or indication	9 (6/6)	6 %
P3.2 Unclear problem/complaint. Further clarification necessary (please use as escape only): prescribing mistake, course of treatment too short	7 (5/2)	4 %
P2.1 Adverse drug event (possibly) occurring	1 (0/1)	0,5 %
P3.1 Unnecessary drug-treatment	1 (1/0)	0,5 %

The Causes codes (C-codes), n=161

C-code	Frequency	Percentage
C4.1 Duration of treatment too short	149	93 %

The Planned Interventions codes (I-codes), n=161

I-code	Frequency	Percentage
I1.4 Intervention discussed with prescriber	74	46 %
I1.3 Intervention proposed to prescriber	53	33 %
I1.2 Prescriber asked for information	42	26 %
I3.4 Instructions for use changed	25	16 %

Case 14

Mrs. N arrives at a pharmacy to collect her monthly prescription for the stomach: omeprazole 20 mg, once a day and she says that she takes it in the morning. During the conversation she mentions that she still has occasionally reflux problems during the night. The pharmacist advises her to take the drug before the evening meal.

Number of DRPs recognised in this case, n=159

Number of DRPs	Frequency	Percentage
1	154	97 %
2	5	3 %

The Problems codes (P-codes), n=160

P-code	Frequency (potential/manifest)	Percentage
P1.2 Effect of drug treatment not optimal	136 (5/132)	85 %
P1.1 No effect of drug treatment despite correct use	17 (5/13)	11 %
P1.3 Untreated symptoms or indication	10 (3/8)	6 %
P2.1 Adverse drug event (possibly) occurring	2 (0/2)	1 %

The Causes codes (C-codes), n=159

C-code	Frequency	Percentage
C7.7 Inappropriate timing or dosing intervals	92	58 %
C3.5 Dose timing instructions wrong, unclear or missing	39	25 %
C6.1 Inappropriate timing of administration and/or dosing intervals by a health professional	22	14 %

The Planned Interventions codes (I-codes), n=160

I-code	Frequency	Percentage
I2.1 Patient (drug) counselling	138	86 %
I3.4 Instructions for use changed	65	40 %

Case 15

Mr. O is a 61-year-old obese man with a history of type 2 diabetes (NIDDM) for 10 years and ischaemic heart disease (angina). He also has a history of constipation relieved by lactulose, taken as required. He has been on glipizide and metformin. When evaluating the drug use, the pharmacist recognises a lack of adherence. The patient admits that he sometimes misses his medication because he simply forgets. The pharmacist discusses the necessity of being compliant with the medication with him, and he will try to be more adherent in the future.

Number of DRPs recognised in this case, n=159

Number of DRPs	Frequency	Percentage
1	144	91 %
2	14	9 %
3	1	0,5 %

The Problems codes (P-codes), n=158

P-code	Frequency (potential/manifest)	Percentage
P1.2 Effect of drug treatment not optimal	140 (75/65)	89 %
P3.2 Unclear problem/complaint. Further clarification necessary (please use as escape only): lack of adherence	9 (3/7)	6 %
P2.1 Adverse drug event (possibly) occurring	8 (4/4)	5 %
P1.3 Untreated symptoms or indication	6 (5/2)	4 %
P1.1 No effect of drug treatment despite correct use	2 (2/0)	1 %
P3.1 Unnecessary drug-treatment	1 (1/0)	0,5 %

The Causes codes (C-codes), n=159

C-code	Frequency	Percentage
C7.1 Patient intentionally uses/takes less drug than prescribed or does not take the drug at all for whatever reason	97	61 %
C7.8 Patient unintentionally administers/uses the drug in a wrong way	50	31 %
C7.7 Inappropriate timing or dosing intervals	14	9 %

The Planned Interventions codes (I-codes), n=159

I-code	Frequency	Percentage
I2.1 Patient (drug) counselling	156	98 %

Case 16

Mr. P is a 72-year-old retired dentist. He has been receiving enalapril 20mg/hydrochlorothiazide 12.5 mg in the morning for about 3 years for his mild-moderate heart failure. This has also kept his blood pressure controlled fairly well at 145-150 / 80-85 mm Hg. He now presents a prescription for digoxin 0.125 mg daily and aspirin 75 mg daily that he tells the pharmacist is for atrial fibrillation. The pharmacist thinks that he should be on warfarin or a DOAC instead of aspirin for the AF and contact the physician. The prescription is adapted.

Number of DRPs recognised in this case, n=159

Number of DRPs	Frequency	Percentage
1	136	86 %
2	22	14 %
3	1	0,5 %

The Problems codes (P-codes), n=159

P-code	Frequency (potential/manifest)	Percentage
P1.2 Effect of drug treatment not optimal	93 (72/24)	58 %
P1.3 Untreated symptoms or indication	46 (35/15)	29 %
P2.1 Adverse drug event (possibly) occurring	20 (19/2)	13 %
P1.1 No effect of drug treatment despite correct use	11 (12/0)	7 %
P3.1 Unnecessary drug-treatment	4 (3/2)	3 %
P3.2 Unclear problem/complaint. Further clarification necessary (please use as escape only)	4 (2/2)	3 %

The Causes codes (C-codes), n=159

C-code	Frequency	Percentage
C1.1 Inappropriate drug according to guidelines/formulary	138	87 %
C1.5 No or incomplete drug treatment in spite of existing indication	25	16 %

The Planned Interventions codes (I-codes), n=159

I-code	Frequency	Percentage
I1.3 Intervention proposed to prescriber	101	64 %
I1.4 Intervention discussed with prescriber	62	39 %
I3.1 Drug changed	55	35 %

Case 17

Mr. Q, 70 years old, has been diagnosed with hypertension 4 months ago (at time of the diagnosis the BP was 180/95 mmHg). The GP has asked him to check his blood pressure regularly every week for the time being. He is being treated with hydrochlorothiazide and an ACE-inhibitor. He comes in with a list of measurements. At the last 3 measurements his blood pressure was 165/95 mmHg and the pharmacist is worried. The pharmacist finds out that the patient has stopped to take his diuretic because he did not want to be bothered by going to the toilet multiple times in the morning when he visits his grandchildren (almost daily). The pharmacist tells him that he must take his medication properly and that will most probably also bring his blood pressure in a normal range again. He is not willing to do that and will go to his GP to discuss the issue.

Number of DRPs recognised in this case, n=159

Number of DRPs	Frequency	Percentage
1	131	82 %
2	27	17 %
3	1	0,5 %

The Problems codes (P-codes), n=158

P-code	Frequency (potential/manifest)	Percentage
P1.2 Effect of drug treatment not optimal	126 (4/123)	80 %
P1.3 Untreated symptoms or indication	26 (2/25)	17 %
P2.1 Adverse drug event (possibly) occurring	9 (1/10)	6 %
P3.2 Unclear problem/complaint. Further clarification necessary (please use as escape only): nonadherence	5 (0/5)	3 %
P1.1 No effect of drug treatment despite correct use	3 (2/2)	2 %
P3.1 Unnecessary drug-treatment	1 (1/0)	0,5 %

The Causes codes (C-codes), n=158

C-code	Frequency	Percentage
C7.1 Patient intentionally uses/takes less drug than prescribed or does not take the drug at all for whatever reason	152	96 %

The Planned Interventions codes (I-codes), n=159

I-code	Frequency	Percentage
I2.1 Patient (drug) counselling	144	91 %
I2.3 Patient referred to prescriber	39	25 %

Case 18

Mrs. R has a history of angina and had a coronary artery bypass graft two weeks ago. Isosorbide Mononitrate was discontinued during the hospital stay. She was discharged from the hospital last week and brings her prescription to the pharmacist. Her GP has prescribed:

- Diltiazem 60 mg, 3 x 1
- Atenolol 50 mg, 1x1
- Isosorbide Mononitrate 40 mg, 3x1
- Simvastatin 20 mg, 1x1
- Acetylsalicylic acid 80 mg, 1 x 1

The pharmacist phones the GP and agrees not to dispense the isosorbide. The GP is going to see the patient soon and will check the blood pressure and discuss the rest of the treatment.

Number of DRPs recognised in this case, n=159

Number of DRPs	Frequency	Percentage
1	140	88 %
2	18	11 %
3	1	0,5 %

The Problems codes (P-codes), n=157

P-code	Frequency (potential/manifest)	Percentage
P3.1 Unnecessary drug-treatment	82 (48/33)	52 %
P2.1 Adverse drug event (possibly) occurring	64 (62/4)	41 %
P1.2 Effect of drug treatment not optimal	12 (9/4)	7 %
P3.2 Unclear problem/complaint. Further clarification necessary (please use as escape only)	5 (1/4)	3 %
P1.1 No effect of drug treatment despite correct use	3 (1/2)	2 %
P1.3 Untreated symptoms or indication	2 (4/0)	1 %

The Causes codes (C-codes), n=158

C-code	Frequency	Percentage
C8.1 Medication reconciliation problem	63	40 %
C1.2 No indication for drug	58	37 %
C1.1 Inappropriate drug according to guidelines/formulary	29	18 %
C1.3 Inappropriate combination of drugs or drugs and herbal medication or drugs and dietary supplements	21	13 %
C1.6 Too many different drugs/active ingredients prescribed for indication	17	11 %

The Planned Interventions codes (I-codes), n=158

I-code	Frequency	Percentage
I1.4 Intervention discussed with prescriber	99	63 %
I1.3 Intervention proposed to prescriber	53	34 %
I3.5 Drug paused or stopped	48	30 %
I1.2 Prescriber asked for information	19	12 %
I1.1 Prescriber informed only	12	8 %

Case 19

Mrs. S is 69 years old, and gradually has more difficulties swallowing her levodopa/benserazide (Madopar® 62.5). She is afraid that soon she will be unable to swallow the capsules. After discussing this with her, the pharmacist calls the doctor to ask if she could have the Madopar® 125 dispersible tablets that she can disperse in water and drink instead of swallowing, and the doctor agrees.

Number of DRPs recognised in this case, n=159

Number of DRPs	Frequency	Percentage
1	153	96 %
2	6	4 %

The Problems codes (P-codes), n=157

P-code	Frequency (potential/manifest)	Percentage
P1.2 Effect of drug treatment not optimal	92 (74/19)	59 %
P3.2 Unclear problem/complaint. Further clarification necessary (please use as escape only): inappropriate drug from, swallowing difficulties	30 (14/14)	19 %
P1.3 Untreated symptoms or indication	21 (21/0)	13 %
P2.1 Adverse drug event (possibly) occurring	15 (14/2)	10 %
P1.1 No effect of drug treatment despite correct use	10 (8/2)	6 %

The Causes codes (C-codes), n=159

C-code	Frequency	Percentage
C2.1 Inappropriate drug form/formulation (for this patient)	142	89 %
C7.9 Patient physically unable to use drug/form as directed	47	30 %

The Planned Interventions codes (I-codes), n=159

I-code	Frequency	Percentage
I1.3 Intervention proposed to prescriber	100	63 %
I3.3 Formulation changed	61	38 %
I1.4 Intervention discussed with prescriber	58	36 %
I2.1 Patient (drug) counselling	29	18 %

Case 20

Mr. T is a 57-year old patient, who has been hospitalized for an acute myocardial infarction (AMI). He enters the pharmacy with some prescriptions, as well as an overview of the medication he should be taking from now on. While checking the different documents, the pharmacist discovers that the prescription (given by the hospital nurse) mentions omeprazole 20 mg, 1x/day, while the medication overview mentions omeprazole 40 mg, 1x/day. The pharmacist is unsure what to do and decides to call the physician in the hospital, who confirms that the correct dose should have been 40 mg.

Number of DRPs recognised in this case, n=159

Number of DRPs	Frequency	Percentage
1	155	97 %
2	3	2 %
3	1	0,5 %

The Problems codes (P-codes), n=159

P-code	Frequency (potential/manifest)	Percentage
P1.2 Effect of drug treatment not optimal	115 (101/17)	72 %
P3.2 Unclear problem/complaint. Further clarification necessary (please use as escape only): documents with contradictive information, error in medication process, prescribing error	18 (8/9)	11 %
P1.1 No effect of drug treatment despite correct use	14 (14/0)	9 %
P2.1 Adverse drug event (possibly) occurring	14 (16/1)	9 %
P1.3 Untreated symptoms or indication	3 (3/0)	2 %
P3.1 Unnecessary drug-treatment	1 (1/0)	0,5 %

The Causes codes (C-codes), n=159

C-code	Frequency	Percentage
C3.1 Drug dose too low	100	63 %
C8.1 Medication reconciliation problem	79	50 %
C6.2 Drug under-administered by a health professional	11	7 %

The Planned Interventions codes (I-codes), n=159

I-code	Frequency	Percentage
I1.2 Prescriber asked for information	89	56 %
I1.4 Intervention discussed with prescriber	53	33 %
I3.2 Dosage changed	52	33 %
I1.3 Intervention proposed to prescriber	19	12 %

Evaluation questionnaire

Response

Data collection took place from 9. 11. 2020 to 19. 1. 2021. There were 144 completed evaluation questionnaires.

Response rate (?) Base: Entered intro

Status	Frequency	State
Entered intro	332	100%
Entered first page	198	60%
Started responding	177	53%
Partially completed	177	53%
Completed	144	43%
Unit usability (50%/80%)		
Usable units	142	80%
Partially usable units	6	3%
Unusable units	29	16%
Breakoffs		
Introductory breakoffs	154	46%
Questionnaire breakoffs	33	10% (neto 19%)
Total breakoffs	187	56%

Terms explanation

Entered intro: each click to the survey is counted, irrespective of whether the survey was completed in full or if the respondent left the survey immediately after clicking on the URL.
Entered first page: each respondent that clicked on 'Next page' is counted.
Partially completed: each respondent that answered at least one question is counted.
Completed the survey: each respondent that answered clicked on the 'End' button on the last page of the survey is counted.

Unit usability:
Usable units: questionnaires where the respondent answered more than 80% of the responses
Partially usable units: questionnaires with 50%-80% of usable responses.
Unusable units: questionnaires with less than 50% of usable responses (but at least 1 question answered)
Usable units + partially usable units + unusable units = partially completed questionnaires = valid questionnaires.

Breakoffs:
The respondent stopped answering the questions and left the survey at a certain point.
Introductory breakoffs: breakoff after reading introduction
Questionnaire breakoffs: breakoffs during filling the questionnaire
Total breakoffs: sum of the above

Sociodemographic data

Country of practice/work

Country	Frequency valid	Percentage valid	Frequency completed	Percentage completed
China	20	11 %	16	11 %
Croatia	13	7 %	12	8 %
Georgia	1	1 %	0	0 %
Germany	11	6 %	9	6 %
Norway	32	18 %	27	19 %
Poland	11	6 %	10	7 %
Slovenia	15	8 %	14	10 %
Spain	16	9 %	7	5 %
Switzerland	31	18 %	30	21 %
Turkey	26	15 %	19	19 %
India	1	1 %	0	0 %
TOTAL	**177**		**144**	

Principal professional setting

Professional setting	Frequency valid	Percentage valid	Frequency completed	Percentage completed
Academic pharmacy	33	19%	27	19%
Administrative pharmacy	2	1%	1	1%
Clinical pharmacy	1	1%	0	0%
Community pharmacy	43	24%	31	22%
Consultant pharmacy	3	2%	2	1%
Hospital pharmacy	81	46%	71	49%
Medical hospital practice	5	3%	4	3%
MSc student pharmacy	7	4%	6	4%
Pharmacy journal	1	1%	1	1%
PhD student pharmacy	1	1%	1	1%
TOTAL	**177**		**144**	

Years of practice

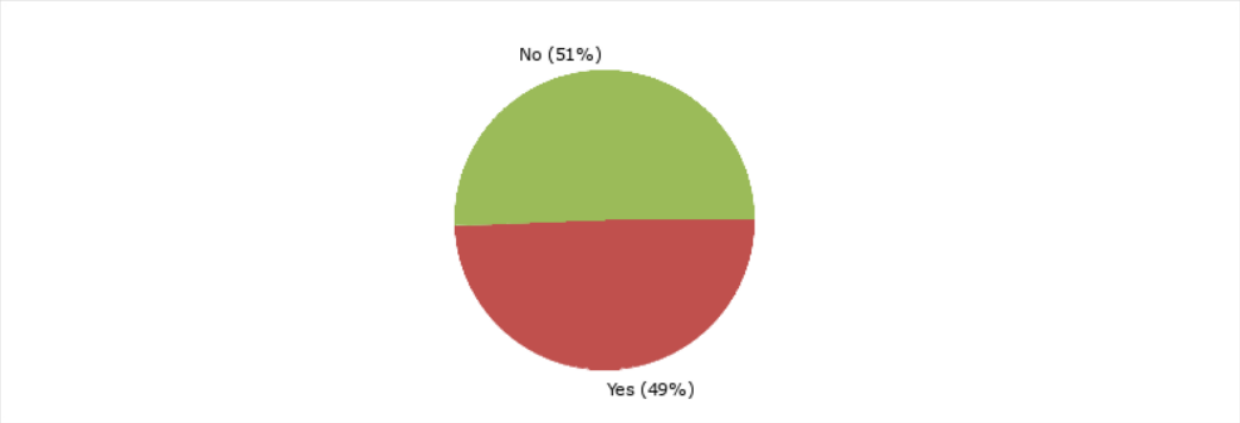
Years of practice	Frequency valid	Percentage valid	Frequency completed	Percentage completed
No practice experience	11	6%	8	6%
0-5 years	54	31%	44	31%
6-10 years	39	22%	34	24%
10-20 years	38	21%	34	24%
20-30 years	24	14%	20	14%
>30 years	11	6%	4	3%
TOTAL	**177**		**144**	

Terms explanation

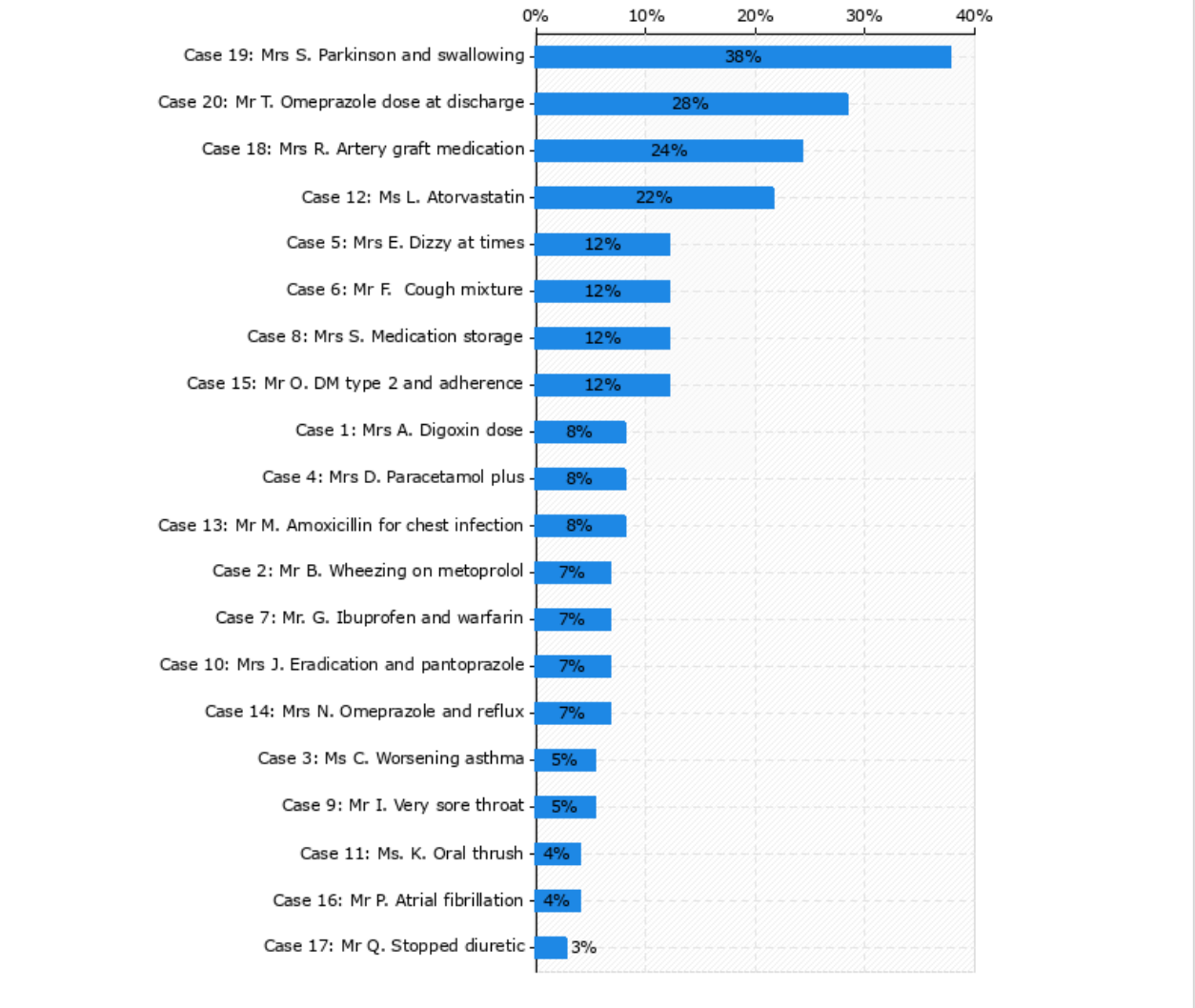
Valid: respondents who answered at least one question.
Completed: respondents who finished the survey.

Problems section

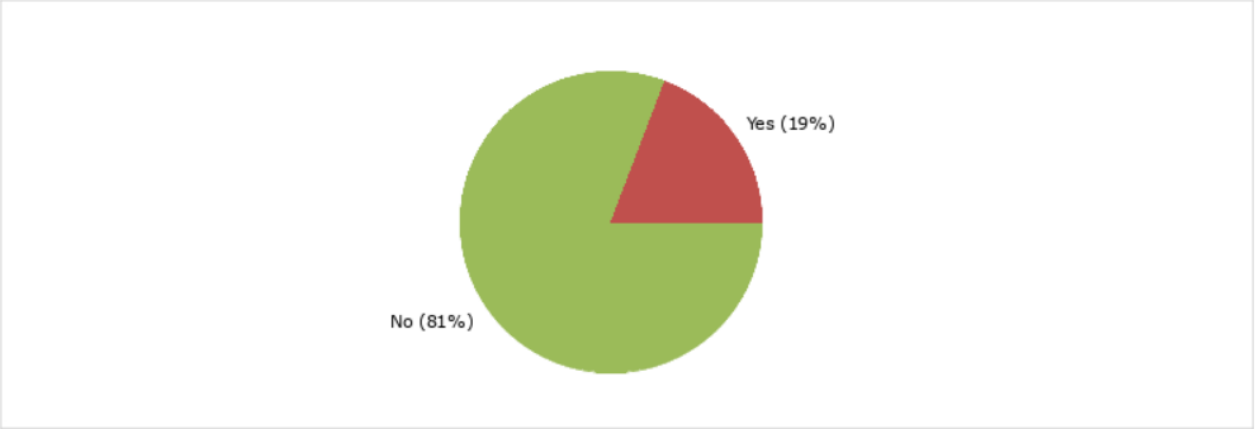
After you had completed the validation cases, did you have problems finding a proper code for any of the problems mentioned in the cases? (n = 156)



If yes, for which case(s)? (n = 74)
Multiple answers are possible



Thinking of the drug-related problems that you encounter in your work, do you find that any significant problem is missing in the problem list of the classification? (n = 156)



If Yes, which problem? Please describe.

there are two option: 7.1 intentionally missing doses and 7.8 unintentionally taking medicine in a wrong way, but there should be a possibility of combination: intentionally taking wrong (maybe taking right is a hassle to a patient so he alters it) and unintentionally missing doses (as we know forgetfulness is a most common reason for nonadherence)

it was difficult to code side effects

potential allergy to any component of the drug

cost of the medication

intentional treatment can be optimal and effective if only the patient had taken the medication. medication reconciliation as a problem

perhaps if the problem is lack of reconciliation, it is difficult to decide what type of problem, eg. cases 12 and 18

in domain "treatment safety": overdosing / toxic effects

i miss a problem category addressing antibiotic resistance. example: if meropenem is chosen instead of benzylpenicillin and the patient gets well without any adverse events none of the problem categories readily applies, at least intuitively.

ADR

something like "simplification of therapy". for example, if bisoprolol is given twice a day instead of once, or atorvastatin given in the evening instead of the morning. to make the therapy easier for the patients.

a problem just called "medication reconciliation" (cause c8.1 could have been moved to the problems-section)

problems with the use/administration of the drug

interactions

missing or unclear information that are not directly related to effectiveness or safety

adherence

I think in the p sections I think therapy effect and safety is not enough to give a proper categorization (e.g. in case of medrec problems)

overuse due to lack of effectiveness, e.g. analgesics, sabas..

anwendungsfehler

check doses and renal function

appropriate drug according to guidelines/formulary, but is not suitable for this patient

I find the division p1.1 to p1.3 slightly confusing. p1.1 refers specifically to correct use. what about no effect of drug treatment due to incorrect use - where to put it? I would have a problem deciding where to classify certain interactions - for example drug a reduces the amount of drug b, and therefore may reduce effectiveness (so p1.1), but this can also be viewed as lack of treatment safety (failure of treatment effectiveness with drug b could be seen as adverse event of drug a).

unintentionally forgetting to use medicines

problems related to drug costs or reimbursement, problems related to satisfaction of patients (for example: optimisation of number of drugs taken per day). we frequently have discrepancies in hospital medical files of patients and a specific item would be welcomed.

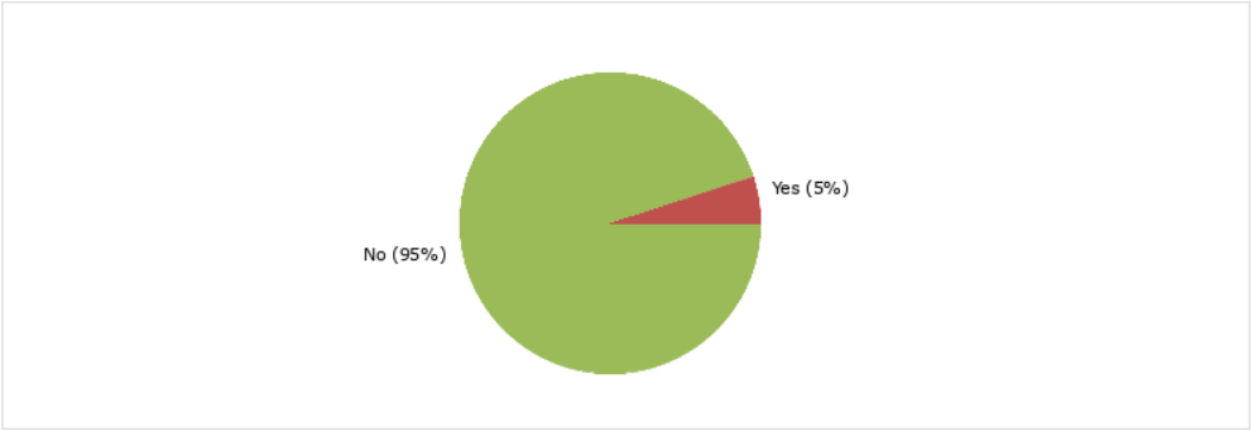
missing drug

pharmacist is, very often, lacking the information on the indication of the drug.

medication error.

I cannot find many problems I encounter in my hospital practice in this classification. The classification seems to be intended only for patients who come to the pharmacy. If you are to design another classification for clinical pharmacy practice in the hospital, I would like to be in your team.

Looking at the classification, do you find any of the mentioned problems redundant (superfluous or overlapping)? (n = 156)



If Yes, which problem(s)? Please describe.

7.10

p1.1 and p1.2 are somewhat overlapping. maybe wise to combine them (effect of drug treatment not optimal). p1.1 is seldom the right category choice, unless you say "reduced/no effect", instead of "no effect". and what do you mean by "correct use"? do you mean "taken as prescribed? "

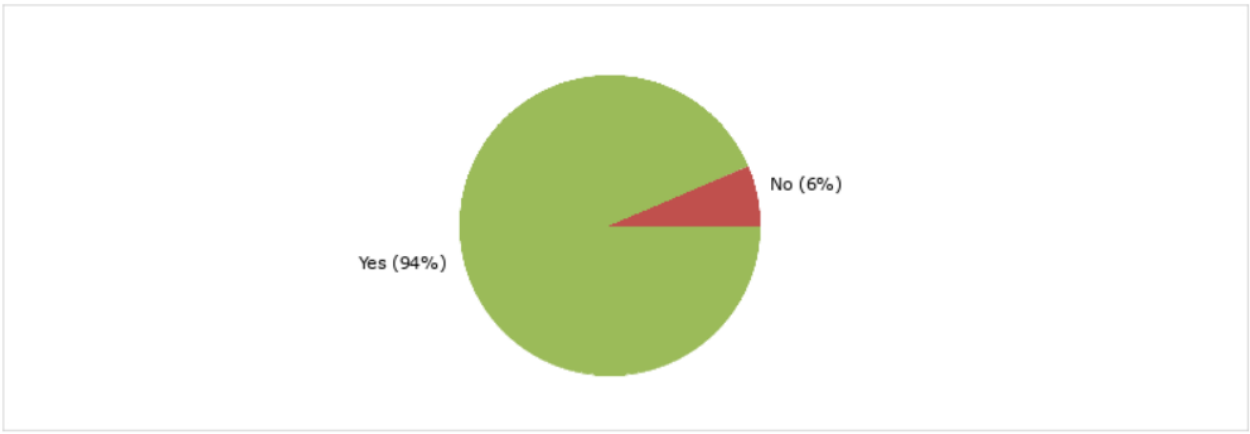
p2.1 specification is not necessary, if there is no other option on the second level

i do not completely understand the difference between p1.1 and p1.2 and when to use the one over the other. using case 2 as an example - how do i know if the patient has no effect (p1.1) or not optimal effect (p1.2)?

p1.1 will in my opinion rarely be used because most of the time there is some kind of error in the use and this will redirect to 1.2

c1.6 redundant with c1.4

Looking at the problem section of the the classification, are the titles of the domains clear? (n = 156)



If No, which problem domain title is unclear? Please describe and give suggestion for improvement

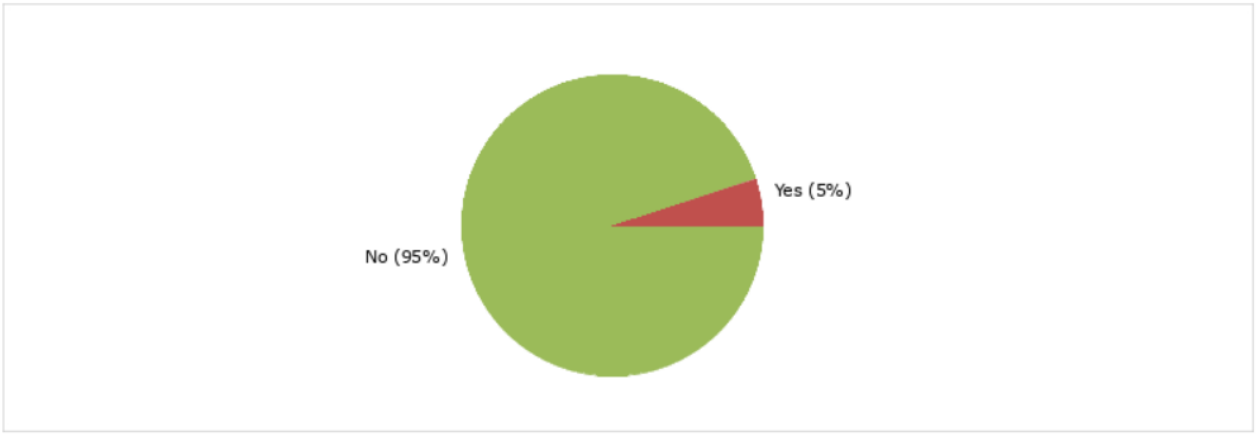
p1.1 versus p1.2 - see my comment in the previous question.

was looking for unnecessary drug, was not obvious that this was to be found under p3 others . use p3 for unnecessary drug and p4 other ??

i suggest to use only: p2 adverse drug event (possibly) occurring - to avoid embarrassment

the title of problems is not clear enough. this part needs to be revised or removed by reviewing its purpose. as a solution suggestion, i can suggest integrating the problems part with the causes part. it creates confusion.

Looking at the classification, would you have placed any of the problems in another domain? (n = 156)



If Yes, which problem and in what domain would you have placed it.

there option "no effect of drug treatment despite correct use" and "p1.2 effect of drug treatment not optimal" - I think that you should allow to choose also no effect in case of intentional improper use-let`s say patient decides to stop taking medications, probably there will be not effect, not just suboptimal effect; so I suggest to put no effect and suboptimal effect independently from correct or incorrect use or if you allow for more combinations

I would place "unnecessary drug-treatment" in "treatment safety" rather than "other"

p3.1 should be under p1

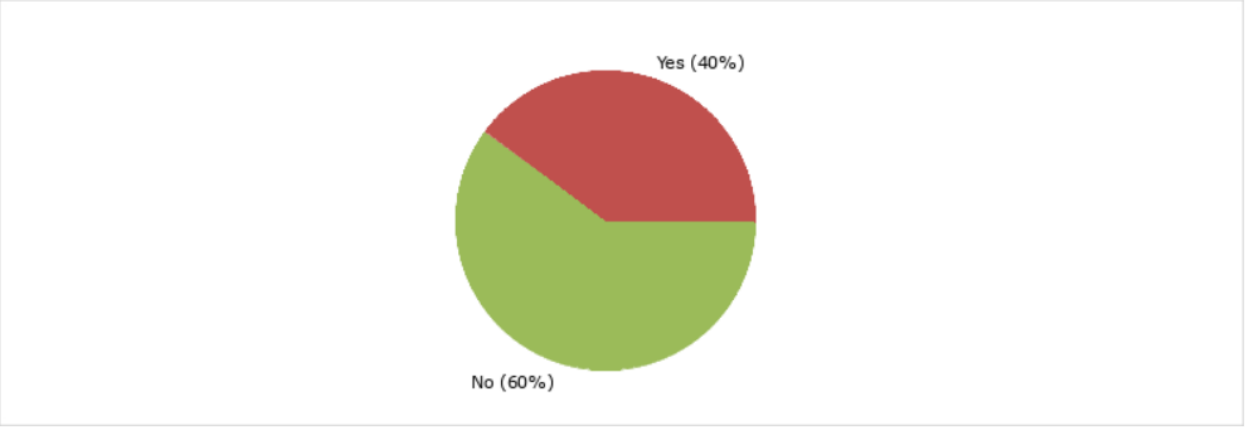
I would remove p2.1.

p3.1 not as "others", but alone equal with "no effect" and "not optimal effect"

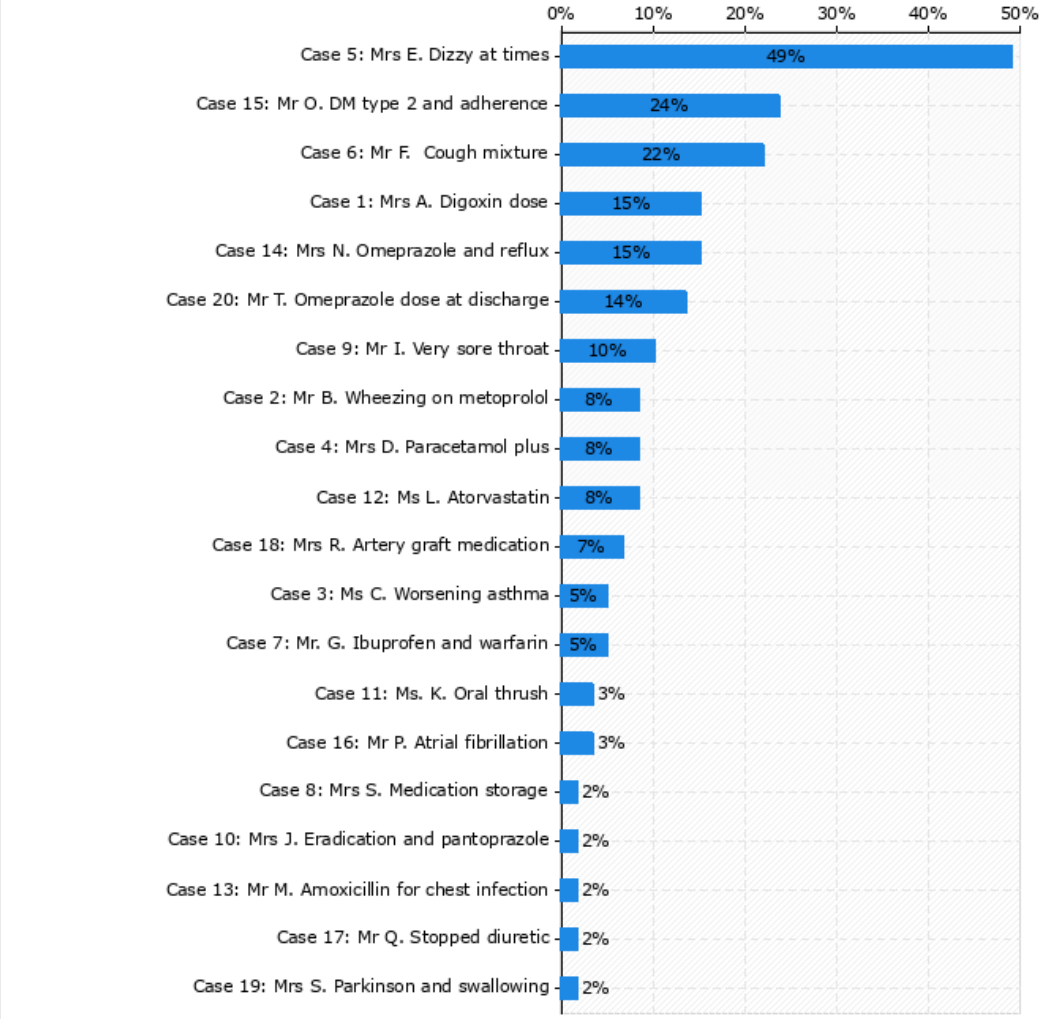
from my point of view, p1.2 and p2.1 could overlap. due to the fact that if the effect of a drug treatment is not optimal, like in case 18, it could also affect the treatment safety.

Causes section

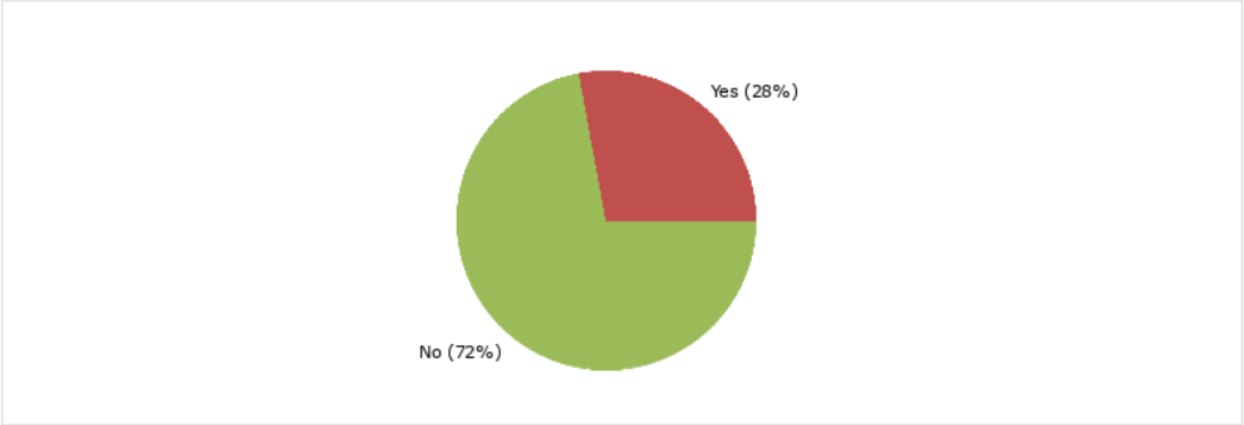
After you had completed the validation cases, did you have problems finding a proper code for any of the Causes mentioned in the cases? (n = 150)



If yes, for which case(s)? (n = 59)
Multiple answers are possible



Thinking of the causes for drug-related problems that you encounter in your work, do you find that any significant cause is missing in the causes list of the classification? (n = 150)



If Yes, which cause(s)? Please describe.

you only allow to choose 7.1 or 7.8, but I think there should be an option to choose unintentional missing doses (forgetfulness is a very common reason of nonadherence!) and intentional incorrect use of medicine (for example patient patient decides to simplify his drug regimen because the right one is too much of a hassle)

drug-drug interaction (e.g. statin + cyp inhibitor)

side effects should be put in a own domain. I coded side effect as c 9.2, because I couldn`t find a different code for this cause.

side effect of drug

in the c1 domain, there should be a code that can be chosen when adverse effects occur (e.g. intrinsic risk of drugs)

conciliation between care levels

side effect of a drug properly used at correct indication

inappropriate ingredient for this particular patient, not because of guidelines

side effect (expected)

inappropriate medication for this patient, although the patient would have the medicine according to guidelines

contraindicated medication

1) inappropriate way of drug administration. (when you notice the doctor has written i.v. and it should be i.m.). 2) inappropriate drug because of pharmacokinetics (a) changing to an arb not totally dependent of kidney function (from an arb totally dependent on kidney function), b) changing to a drug with no active metabolites in a patient with reduced liver function (from one with active metabolites)

inappropriate drug for the patient (not according to guidelines/formulary)

adverse drug reaction

drug administration time

inappropriate drug choice

adherence problems (i.e. case 15) - or is this included in c7.8? if it should be included in c7.8 this one should read "patient unintentionally adm/uses the drug in a wrong way, takes less drug than prescribed or does not take the drug at all".

undesirable drug effect when used correctly; missing or incomplete information

contraindication

patient unintentional takes less drug than prescribed

non-intentional not-adherence (forgetting to take the drugs), different dosages in prescriptions / medication overview

1.inappropriate drug due to patient risk factors

cpoe-related (technical) problems

manifest adverse drug events with no obvious reasons

inappropriate drug because of adverse effects, allergy...for this patient

dose adaption to altered physical condition (e.g. renal insufficiency) not done correctly

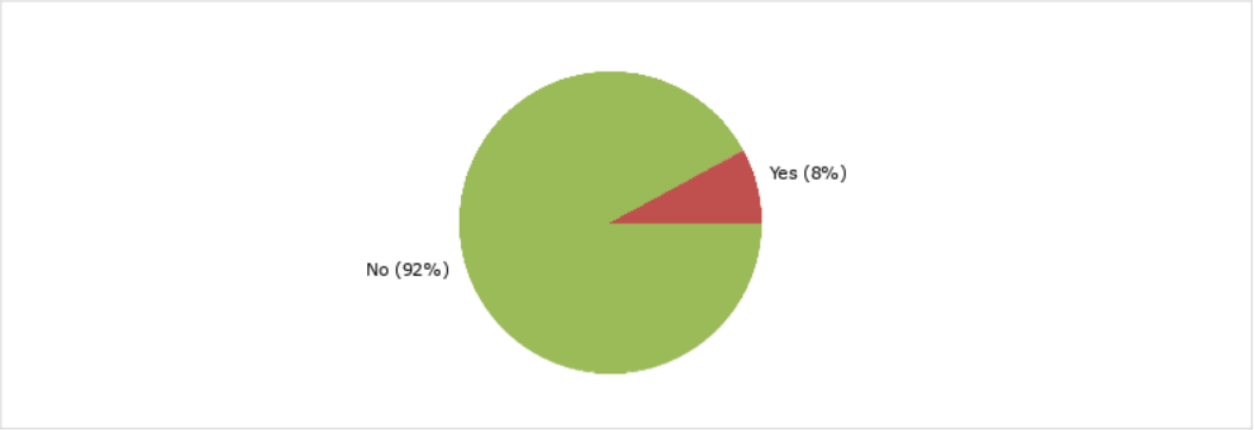
n/a

unclear medical history (divergent information from gp and specialist for example)

causes concerning prescribing, handwriting, unintentional omissions etc.

side effect despite correct prescription, indication and use. and patient unintentionally forgets to take the drug

Looking at the classification, do you find any of the mentioned causes redundant (superfluous or overlapping)? (n = 150)



If Yes, which cause(s)? Please describe.

7.10

c1.2, c4.1 and c7.4 overlap in the case 10

c3.5 and c7.7. probably the c7.7 should be patient`s fault, and c3.5, prescriber`s fault. it should be described better.

not redundant, but c7.7 should be "inappropriate/not optimal timing og dosing intervals".

inappropriate combination of drugs (c1.3) and inappropriate duplication (c1.4) - eg case 4 - could be both, c1.3 and c1.4.

do the classification need both c3.5 and c7.7? (i.e.case 14)

c7.7 and c7.8

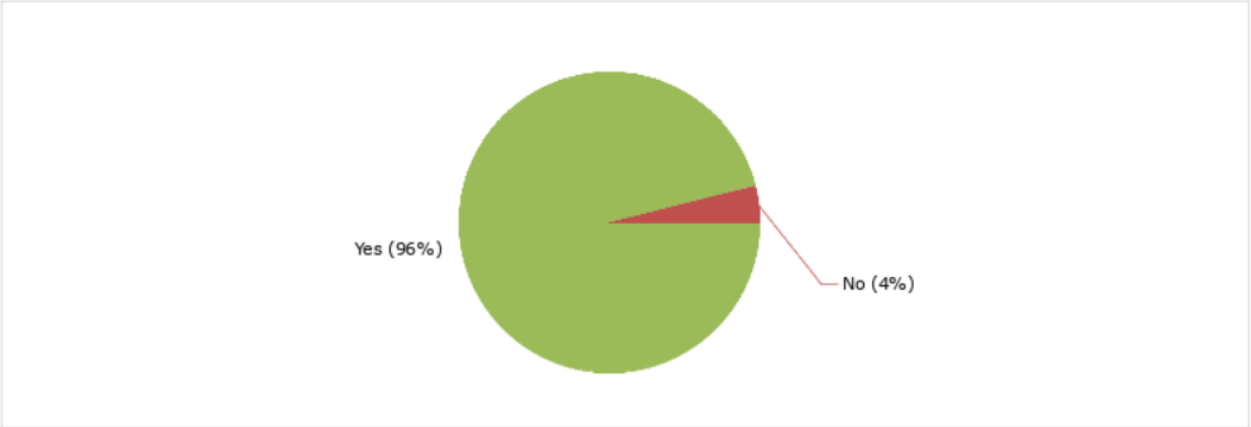
1/5: side effects do be discussed with the gp, 9/11: side effects due to lack of information about application of drug

c1.6 with c1.3

c.3.6 dose timing might be alternative to the proposed one

c7.4 - c1.2

Looking at the causes section of the the classification, are the titles of the domains clear? (n = 150)



If No, which Causes domain title is unclear? Please describe and give suggestion for improvement.

c6 should involve "health professional" also in the primary domain name

ref case 15 forgetfulness - the cause is patient related, but none of the subcategories address forgetfulness as a cause. I chose 7.1, but could also have chosen 7,8, depending on whether I believe forgetfulness is unintentional or indirectly intentional. Suggestion: include the term "forgetfulness" in the text of 7.1 and/or 7.8.

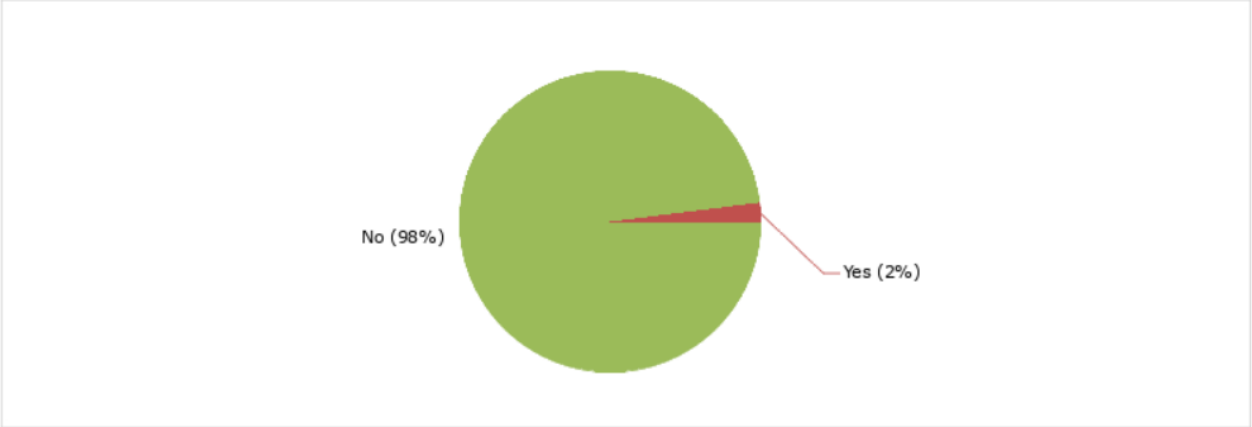
c7.1

6. drug use process - administered by a health professional - probably as in application of the drug in hospitals?

c1.1 : too vague and too subjective concerning guidelines. in our practice we never use this item. for each item, a definition and few examples would be welcome.

c7.1 "patient intentionally uses/takes less drug than prescribed or does not take the drug at all for whatever reason" : how to code if the patient sometimes "unintentionally" forgets to take his drug? either it goes in this c7.1 cause, but it should be specified "intentionally or unintentionally", or it goes in the c7.10 cause (unable to understand), but it doesn`t seem optimal no more

Looking at the classification, would you have placed any of the causes in another domain? (n = 150)



If Yes, which Cause and in what domain would you have placed it in?

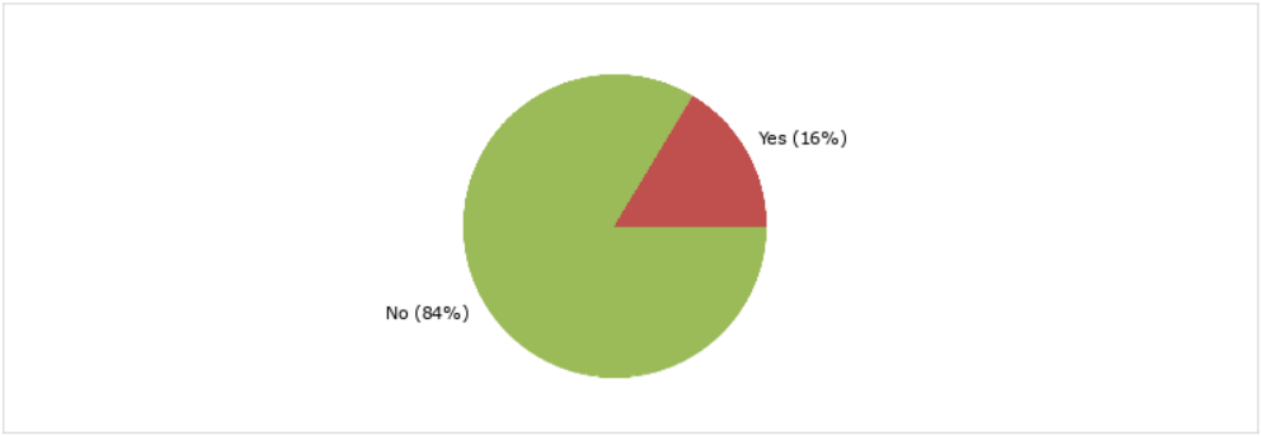
side effect as a own domain.

c8.1 medical conciliation problems should be included in sections c1-c4

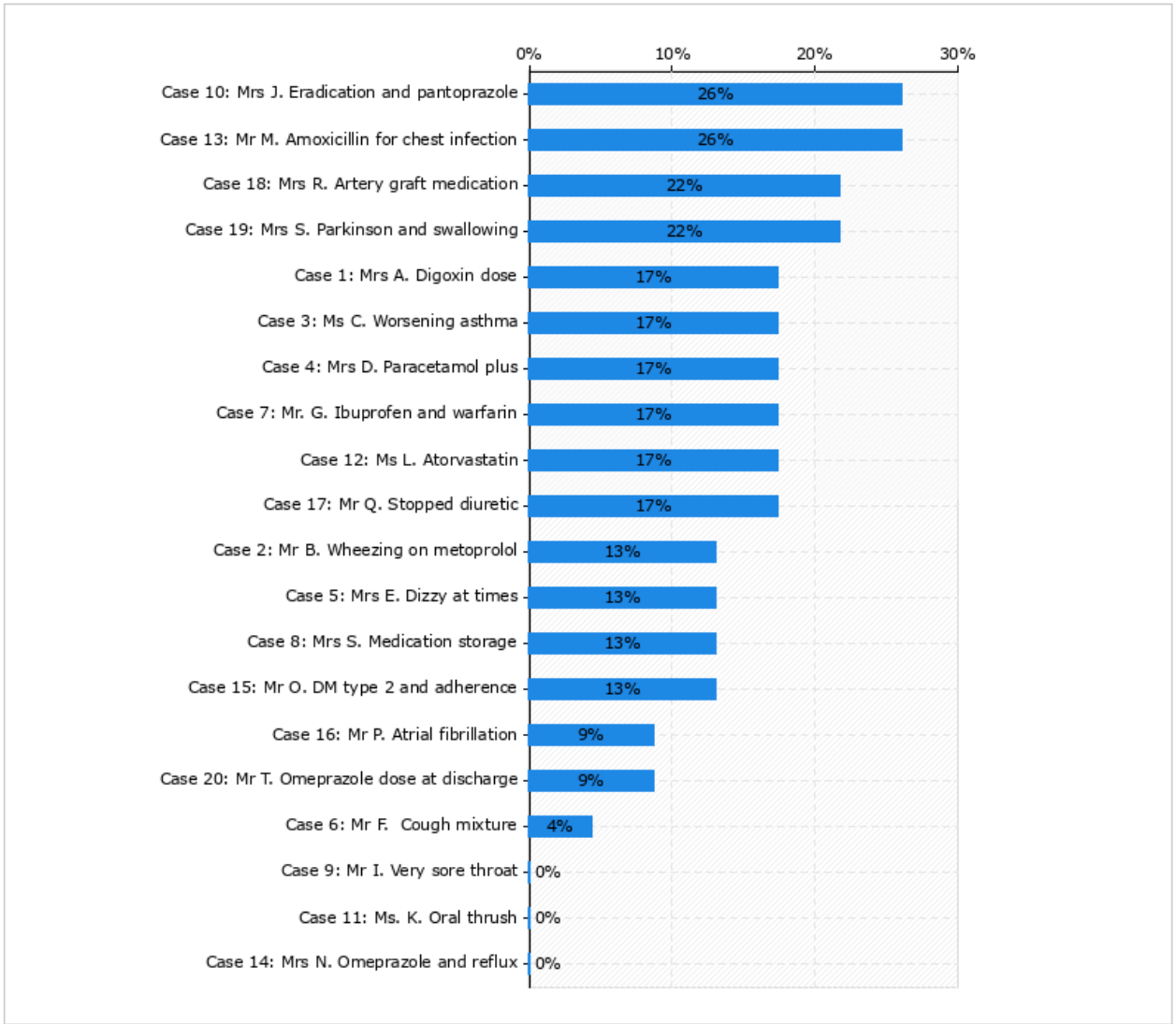
the header for the concentration, infusion rate for administration of the drug may be added.

Planned Interventions section

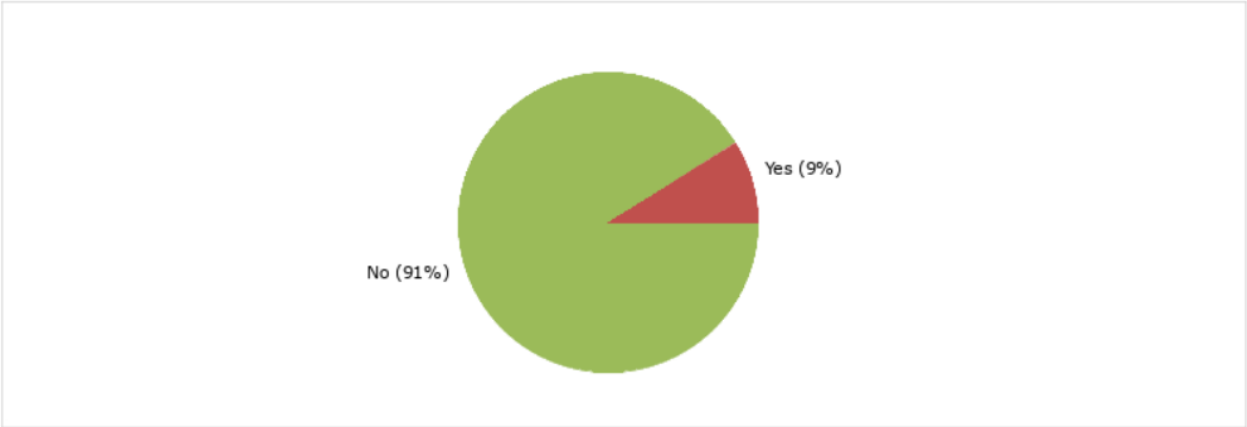
After you had completed the validation cases, did you have problems finding a proper code for any of the Planned Interventions mentioned in the cases? (n = 146)



If yes, for which case(s)? (n = 23)
Multiple answers are possible



Thinking of the interventions for drug-related problems that you encounter in your work, do you find that any significant Intervention is missing in the Planned Intervention list of the classification? (n = 146)



If Yes, which Intervention(s)? Please describe.

patient referred to other service in pharmacy (i.e. drug conciliation program, personal dosification services, etc)

it is unclear what to sign when the patient is going to see the doctor. patient education should be more outstanding.

at patient level ：
the pharmacist convinces her of the necessity of using it regularly twice a day.

Provide oral information; talk with the patient himself

frequency changed

drug restarted (if missing on the prescription)

clarification in the case notes

discussion with the physician and suggesting a solution may sometimes be one and the same thing. hard to distinguish these.

i3: if patients change time. is it i3.4? not clear to me. should have one for changed time for medication (like in case 14)

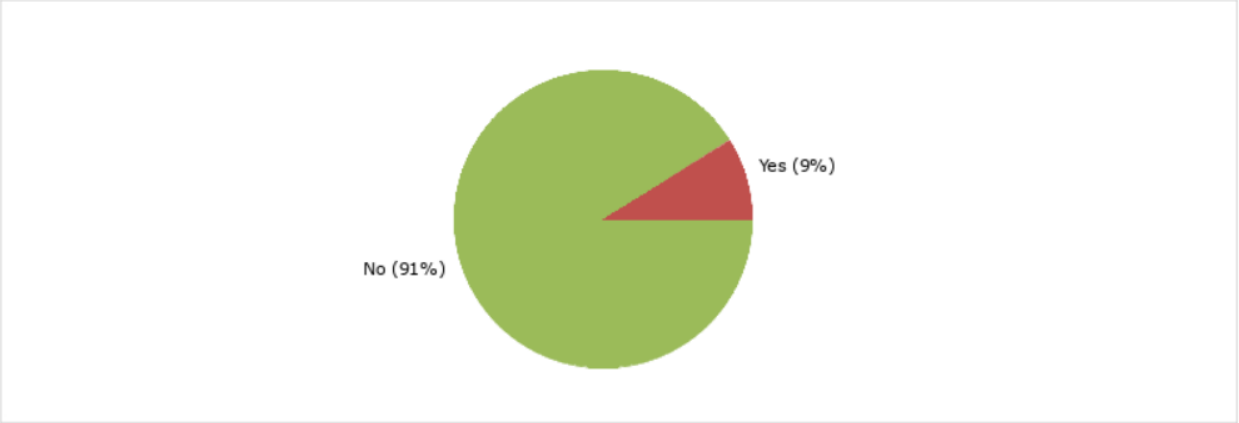
inviting the patient to a return visit to the pharmacy in order to control, for example, the correct use of inhalers

correction of medical file in case of discrepancies between several documents

offering therapeutic drug monitoring

treatment duration changed

Looking at the classification, do you find any of the mentioned Planned Interventions redundant (superfluous or overlapping)? (n = 146)



If Yes, which Planned Intervention is redundant? Please describe and give suggestion for improvement.

i1.1 and i1.2 seem redundant. if we inform the prescriber, it is because we have to make a decision, just informing the prescriber could be useless. the same for i1.3 and i1.4

i1.3 and u1.4 are overlapping. maybe i1.3 should write "intervention proposed to prescriber, without opportunity to discuss it"? i1.2 prescriber asked for information, may be deleted (I don't think we ask for information without discussing the intervention with the prescriber, do we?)

p2 and p3 are overlapping. to me a discussion is an integral part of a proposal.

i1.3 and i1.4: sometimes unclear/difficult to distinguish between them. is it possible to explain the difference with an example?

prescriber informed is unnecessary, I never just inform the prescriber. intervention proposed or discussed is almost the same, for me it`s always kind of a discussion.

I find it difficult to distinguish between "int. proposed to prescriber (i1.3)" and "int. discussed with prescriber" (i 1.4). can these be merged to one point?

the difference between i1.3 (proposed) and i1.4 (discussed) is not always clear. normally if you contact the prescriber, you always should come with a proposition which is to be discussed then together.

i1.3 and i1.4

I could not differentiate properly between i 1.3 and i 1.4. is there a definition? or could the form of the intervention (oral, written etc.) make the difference?

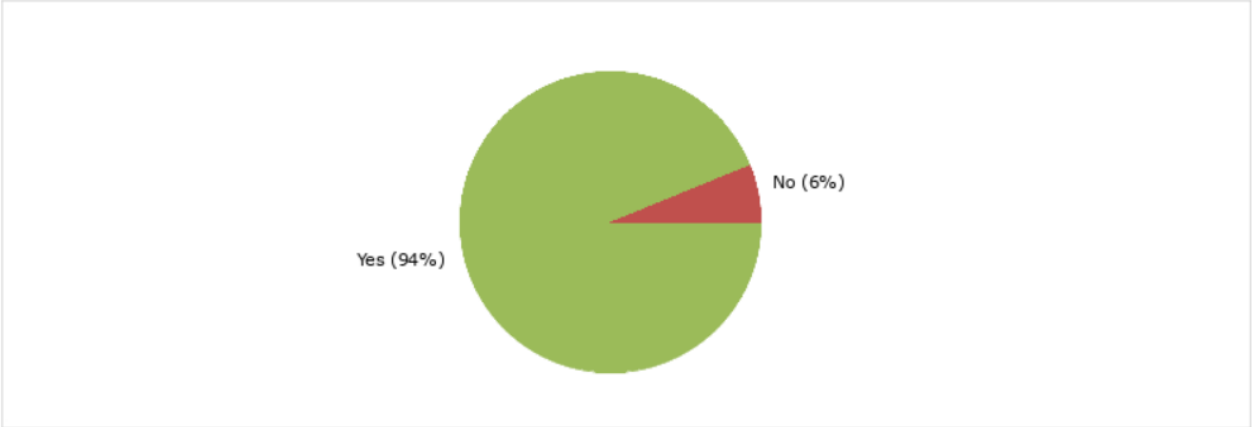
for me the difference between i1.3 (intervention proposed to prescriber) and i1.4 (intervention discussed with prescriber) is not clear. if an intervention is discussed, there has also to be a proposition. This is why I would eliminate the intervention i1.4.

intervention proposed to prescriber and intervention discussed with prescriber is very similar therefore difficult to distinguish.

i1.3 and i1.4 can overlap. I don`t know if you can say that pharmacist proposes intervention without discussing it. ; any intervention at drug level probably involves an intervention at a patient level, i.e. patient counselling.

not always clear regarding the cases if i1.3 and i1.4 are overlapping

Looking at the Planned Intervention section of the the classification, are the titles of the domains clear? (n = 146)



If No, which Planned Intervention domain title is unclear? Please describe and give suggestion for improvement.

the titles are not clear, just not sure whether to choose 1.4, do you also need to choose 1.3 (because it is kind of logical pre-step)

difficult to choose between i1 or i2 when you only talk with patient, but doctor need to change prescription. more obvious when you see the categories beneath

i.1.3 and i1.4. when is the intervention proposed and when discussed?

i1.3 and i1.4 (is there a special difference?) i2.2. I think "only" should be removed

it is unclear whether family member in the “spoken to family member/caregiver” includes patient

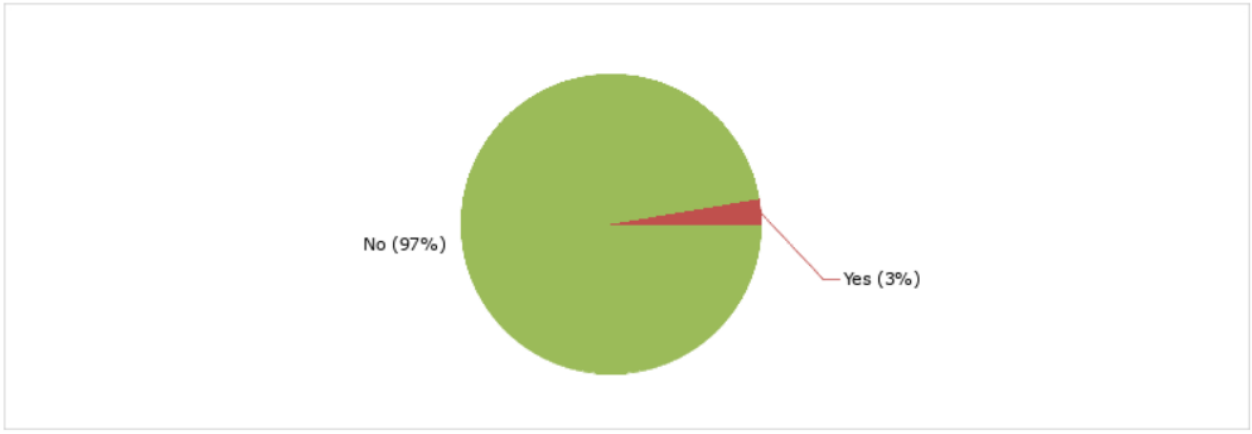
i3.2 dosage changed - does this mean the strength of the drug or the frequency of intake changed? or does it include both scenarios?

I`m not sure to well understand the difference between intervention proposed to prescriber and intervention discussed with prescriber?

What is the difference between `intervention proposed to prescriber` and `interventions discussed with prescriber`. I think these are so similar

g1 items should be rearranged more clearly and separated from each other with certain limits.

Looking at the classification, would you have placed any of the Planned Interventions in another domain? (n = 146)



If Yes, which Planned Intervention and in what domain would you have placed it in?

other

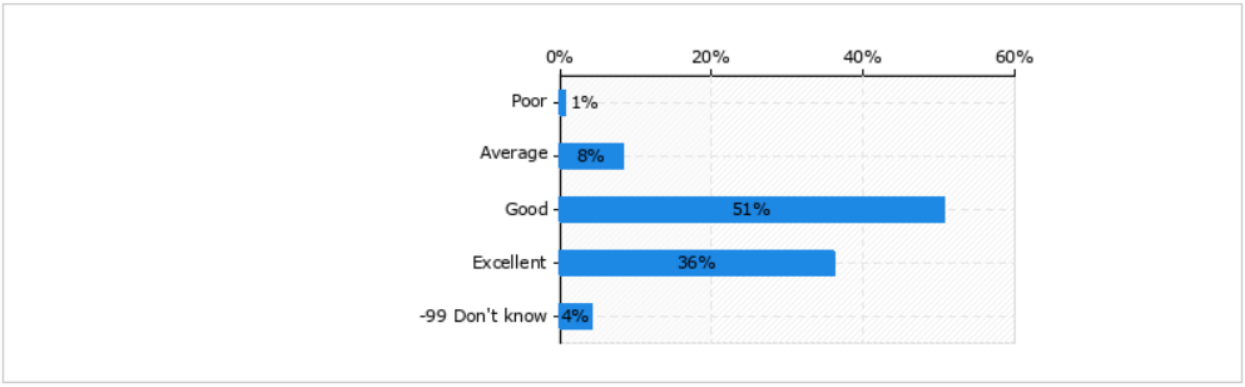
Patient level

I am not sure if I want to put "instructions for use" to drug level or assume it as part of patient counselling or written information.

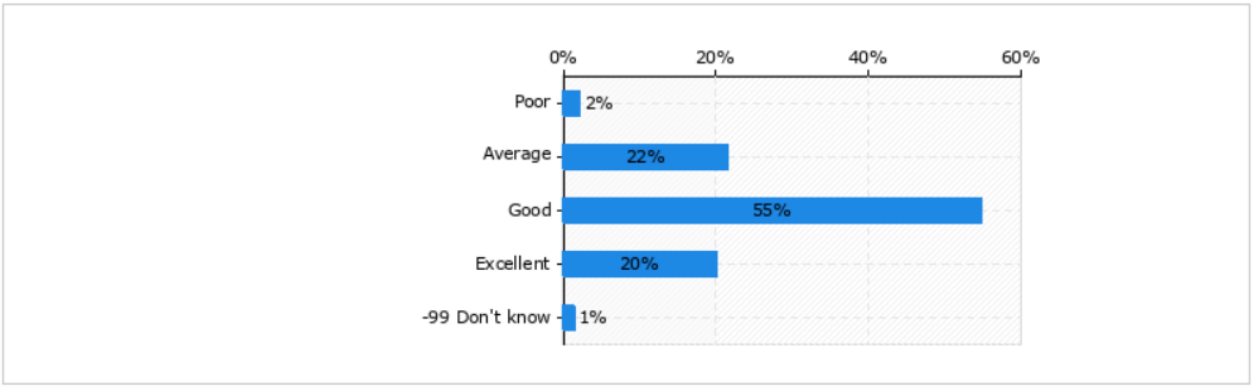
How should we evaluate the issues consulted with us without any problem? for example, consultation on drug dosage.

General

How did you rate the usability of the classification for research? (n = 144)



How did you rate the usability of the classification for daily professional practice? (n = 144)



Additional comments

You don’t have enough time to differentiate problems so much in details for daily practice, but an excellent tool for research.

I forgot to rate all intervention possibilities for cases 1 to 15. I just rated one intervention and I forgot to rate "at drug level". Unfortunately, there is no possibility to go back to review all cases again.

The dilemma is probably that for daily business we would prefer to have less options / categories while we would prefer a high granularity for research. I think the current classification is a well achieved compromise. :o)

This classification is a great way to learn how to uncover drug related problems, but in the daily work it would takes too long time to classify all drug related problems.

For daily work: perhaps a little time consuming to use.

Too many details? Hard to extract anything from it, because you will have few cases for each alternative, and each case may have several causes and several interventions? I think it may be useful if you look at case level c1, c2, c3 etc, and intervention level i0, i1 etc.

Concerning "daily professional practice": in a community pharmacy I have rated the usability as "good". This is due that I find that the classification is sufficiently intuitive to make it easy to classify correctly. Nevertheless, due to the number of items you have to tick, especially in the c-section, it might be challenging to encompass this activity as part of a busy workday. Concerning "research": I have ticked "don´t know" as I am not into research in this field. General comment: I miss cases from hospital pharmacy practice.

For me, c 7.1 is sometimes frustrating with its use of "intentionally": case 15 describes a man, who unintentionally takes less drug than prescribed, because he "simply forgets." Generally well done, also with the online questionnaire - well done!

Too detailed/time consuming

No

i2.12.1 what does it mean specifically? Does the patient take the initiative to consult the pharmacist or does the pharmacist talk to the patient?

The classification is very specific and give detailed information about problem and causes for a drp - but it will perhaps take too long time in daily practice(?)

I think the classification system is a good tool although time consuming in daily practice. It would be great, if for each case an example would be mentioned. This helps in daily practice, especially if new colleges enter the team and are not used to the classification system.

Too much detail for daily use, but good for research and when learning to perform medication review.

If you change your answer the subsections remain.

Good work - we need this!

Additional comments to causes: what is the difference between c1.3. and c1.6.? (hard to distinguish) c5.2 is about prescriber?

The online form was unclear about whether to choose and decide on one problem (the main problem as explained in the empty reusable form and the preamble) or to mention all of them (multiple answer possible and title "the problem-s!" but not possible to define the main problem afterwards as asked for). The online form with the drop-down list is easy to use but has a risk of forgetting to erase sub-points set accidentally.

The classification takes a lot of time and depends a lot of the person doing the classification and even the day of classification (I did the classification on several days and would not have chosen exactly the same classification for the same problem on the different days).

I missed more options in classifying problems. In some of the cases either p1 nor p2 did really fit well.

The classification is useful for practice, but only when just p, c, i, o are used, it's impossible to choose a lot of different codes at practical work in the pharmacy.

The only tool is easy to use and makes rating much more convenient. Very good!

I had some problem to classify the cause of the adr in case 5. If the adr is identified despite the dose, dosage scheme, daily frequency or duration of drug administration were correct. It was unclear for me what is the cause of the problem (I put 9.3), because the problem is connected to the mechanism of the active substance and could not be predicted in advance, like for example allergic reaction for the active substance.

This classification system is a little detailed. If it`s a little simpler, we can use it more often in our daily practice.

This classification is more suitable for our clinical pharmacy practice than other classifications. However, if it is adapted to different areas such as hospitals and pharmacies, it needs to be updated. We see that some titles and items are interpreted differently by everyone and there are no clear distinctions regarding classification. My request from you is to prepare a "user manual" on drug-related problems with examples corresponding to each title and item. Thanks.

I think the classification of drp will be effective with accepted results in the research relating to the drp. Best regards.