

Supplemental material

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Online supplemental appendix 1. Description of 121 quality indicators

No.	Numerator	Denominator	ATC code ^a	p-DRPs ^b	c-DRPs ^c
Sedative hypnotics/anxiolytics					
1	Number of those that were evaluated for ADRs (oversedation, cognitive decline, loss of motor function, falls, fractures)	Number of older people taking benzodiazepines	N05B, N05C	P2.1	C9.2
2	Number of those who received information about a benzodiazepine withdrawal syndrome	Number of older people taking benzodiazepines	N05B, N05C	P2.1	C5.2
3	Number of those that were evaluated for drug-drug interactions	Number of older people taking the following medications: ●Ramelteon & inhibitors of CYP1A2 ●Triazolam, alprazolam, brotizolam or suvorexant & inhibitors of CYP3A4	N05B, N05C	P2.1	C1.3
Antidepressants					
4	Number of those that were evaluated for drug-disease interactions (exacerbation of comorbidities)	Number of older people with epilepsy, narrow angle glaucoma, cardiovascular disease or benign prostatic hyperplasia, taking antidepressants	N05A, N06A	P2.1	C9.2
5	Number of those that were evaluated for drug-drug interactions (hemorrhage)	Number of older people taking the following medications: ●Antidepressants & NSAIDs ●Antidepressants & antiplatelets	N05A, N06A	P2.1	C1.3
6	Number of those that were evaluated for ADRs (anticholinergic symptom, drowsiness, dizziness)	Number of older people taking TCAs	N06A	P2.1	C9.2
7	Number of those whose medical history of angle closure glaucoma or recent myocardial infarction was checked	Number of older people taking TCAs or maprotiline	N06A	P2.1	C1.1
8	Number of those whose medical history of long QT syndrome was checked	Number of older people taking TCAs or escitalopram	N06A	P2.1	C1.1
9	Number of those that were evaluated for ADRs (extrapyramidal symptoms)	Number of older people taking sulpiride	N05A	P2.1	C9.2
10	Number of those who received appropriate monitoring (a renal function) by pharmacists and whose medications (use sulpiride ≤ 50 mg/day) were evaluated	Number of older people taking sulpiride	N05A	P2.1	C3.2
11	Number of those that were evaluated for ADRs (falls, gastrointestinal hemorrhage)	Number of older people taking SSRIs	N06A	P2.1	C9.2
12	Number of those who received information about a SSRI withdrawal syndrome	Number of older people taking SSRIs	N06A	P2.1	C5.2
Drugs for BPSD					
13	Number of those that were evaluated for ADRs (cognitive decline, extrapyramidal symptoms, falls, swallowing function, oversedation)	Number of older people taking antipsychotics	N05A	P2.1	C9.2
14	Number of those that were evaluated for ADRs (pseudohyperaldosteronism)	Number of older people taking yokukansan (Japanese traditional medicine)	Not available	P2.1	C9.1
15	Number of those whose medical history of Parkinson's disease was checked	Number of older people taking butyrophenones	N05A	P2.1	C1.1

16	Number of those whose medical history of diabetes was checked Antihypertensives	Number of older people taking quetiapine or olanzapine	N05A	P2.1	C1.1
17	Number of those whose medications (discontinue α -blockers) were evaluated	Number of older people taking α -blockers in hypertension	C02C	P2.1	C1.1
18	Number of those that were evaluated for drug-drug interactions	Number of older people taking the following medications: ●Nisoldipine, felodipine, azelnidipine or nifedipine & inhibitors of CYP3A	C08C	P2.1	C1.3
19	Number of those whose factors affecting medication adherence were listed and who received medication management services	Number of older people with poor medication adherence taking ARBs or ACE inhibitors	C09A, C09C, C09D	P1.2	C7.1
20	Number of those who met the proportion of days covered threshold of 80% or more during the past 6 months	Number of older people taking ARBs or ACE inhibitors	C09A, C09C, C09D	P1.2	C7.1
21	Number of those whose medications (use CCBs, ARBs, ACE inhibitors or thiazide diuretics) were evaluated	Number of older people with hypertension, without CCBs, ARBs, ACE inhibitors or thiazide diuretics	C02A, C02C, C02D, C02L, C03B, C03C, C03D, C07A, C09X	P1.2	C1.5
22	Number of those taking CCBs, ARBs, ACE inhibitors or thiazide diuretics Antidiabetics	Number of older people taking antihypertensives	C02A, C02C, C02D, C02L, C03A, C03B, C03C, C03D, C07A, C08C, C08D, C09A, C09C, C09D, C09X, C10B	P2.1	C1.5
23	Number of those whose medications (use DPP-4 inhibitors as an alternative drug) were evaluated	Number of older people taking sulfonylureas	A10B	P2.1	C1.1
24	Number of those without sulfonylureas	Number of older people taking antidiabetics	A10B	P2.1	C1.1
25	Number of those that were evaluated for ADRs (hypoglycemia)	Number of older people taking sulfonylureas or self-injecting insulin	A10A, A10B	P2.1	C9.2
26	Number of those that were evaluated for drug-drug interactions	Number of older people taking the following medications: ●Glimepiride, glibenclamide or nateglinide & inhibitors of CYP2C9	A10B	P2.1	C1.3
27	Number of those that were evaluated for ADRs (hypoglycemia, lactic acidosis, diarrhea)	Number of older people taking metformin	A10B	P2.1	C9.2
28	Number of those whose medications (discontinue pioglitazone) were evaluated	Number of older people with heart failure, taking pioglitazone	A10B	P2.1	C1.1
29	Number of those that were evaluated for ADRs (ileus)	Number of older people taking α -glucosidase inhibitors	A10B	P2.1	C9.2
30	Number of those that were evaluated for ADRs (dehydration, unexplained weight loss, diabetic ketoacidosis, urogenital infection)	Number of older people taking SGLT2 inhibitors	A10B	P2.1	C9.2
31	Number of those who received information about sick day management plan	Number of older people taking SGLT2 inhibitors	A10B	P2.1	C5.2
32	Number of those whose medications (discontinue diuretics) were evaluated	Number of older people taking the following medications: ●SGLT2 inhibitors & diuretics	A10B	P2.1	C1.3

33	Number of those who received appropriate monitoring (HbA1c, blood glucose level) in pharmacies	Number of older people taking antidiabetics	A10A, A10B	P1.2	C9.1
Antihyperlipidemics					
34	Number of those that were evaluated for ADRs (myalgia, digestive symptoms, new-onset diabetes)	Number of older people taking statins	C10A, C10B	P2.1	C9.2
35	Number of those that were evaluated for drug-drug interactions	Number of older people taking the following medications: ●Fluvastatin & inhibitors of CYP2C9 ●Simvastatin or atorvastatin & inhibitors of CYP3A	C10A, C10B	P2.1	C1.3
36	Number of those whose cyclosporine use was checked	Number of older people taking rosuvastatin or pitavastatin	C10A, C10B	P2.1	C1.3
37	Number of those that were evaluated for drug-drug interactions	Number of older people with renal dysfunction taking the following medications: ●Statins & fibrates	C10A, C10B	P2.1	C1.3
38	Number of those taking statins	Number of older people taking antihyperlipidemics	C10A, C10B	P2.1	C1.1
Anticoagulants					
39	Number of those whose renal function (creatinine clearance > 30 ml/min) was checked	Number of older people taking DOACs	B01A	P2.1	C9.1
40	Number of those that were evaluated for drug-drug interactions (hemorrhage)	Number of older people taking the following medications: ●DOACs & antiplatelets	B01A	P2.1	C1.3
41	Number of those whose itraconazole use was checked	Number of older people taking dabigatran	B01A	P2.1	C1.3
42	Number of those who received appropriate monitoring (INR) in pharmacies	Number of older people taking warfarin	B01A	P2.1	C9.1
43	Number of those who received information about food interactions with warfarin (foods rich in vitamin K)	Number of older people taking warfarin	B01A	P1.2	C7.5
Antiulcers					
44	Number of those that were evaluated for ADRs (cognitive decline)	Number of older people taking H2 blockers	A02B	P2.1	C9.2
45	Number of those that were evaluated for drug-drug interactions	Number of older people taking the following medications: ●Omeprazole or lansoprazole & inhibitors of CYP2C19	A02B	P2.1	C1.3
46	Number of those taking PPIs	Number of older people taking antiulcers	A02A, A02B, A03A, A03B, A16A	P2.1	C1.1
Antiinflammatories					
47	Number of those that were evaluated for ADRs (liver dysfunction)	Number of older people taking acetaminophen overdose	N02A, N02B	P2.1	C3.2
48	Number of those that were evaluated for drug-drug interactions (NSAIDs-induced ulcers)	Number of older people taking the following medications: ●NSAIDs & antiplatelets ●NSAIDs & anticoagulants ●NSAIDs & glucocorticoids	M01A, N02B	P2.1	C1.3
49	Number of those that were evaluated for drug-drug interactions (renal dysfunction, hyponatremia)	Number of older people taking the following medications: ●NSAIDs & ARBs ●NSAIDs & ACE inhibitors ●NSAIDs & diuretics	M01A, N02B	P2.1	C1.3

50	Number of those whose medications (use selective COX-2 inhibitors as an alternative drug) were evaluated	Number of older people with a medical history of peptic ulcers, taking NSAIDs	M01A, N02B	P2.1	C1.1
51	Number of those whose medications (use PPIs or misoprostol) were evaluated	Number of older people taking NSAIDs for ≥ 3 months, without gastroprotection	M01A, N02B	P2.1	C4.2
52	Number of those taking PPIs or misoprostol Antimycobacterials/antivirals	Number of older people taking NSAIDs for ≥ 3 months	M01A, N02B	P2.1	C4.2
53	Number of those that were evaluated for ADRs	Number of older people with renal dysfunction taking vancomycin, aminoglycosides, fluoroquinolones or aciclovir	J01G, J01M, J01X, J05A	P2.1	C3.2
54	Number of those whose valproate use was checked	Number of older people taking carbapenems	J01D	P2.1	C1.3
55	Number of those that were evaluated for drug-drug interactions (convulsion)	Number of older people taking the following medications: ●Fluoroquinolones & NSAIDs	J01M	P2.1	C1.3
56	Number of those who received information about that drugs containing Al/Mg/Fe should be separated by at least 2 hours Laxatives	Number of older people taking the following medications: ●Tetracyclines & drugs containing Al, Mg or Fe ●Fluoroquinolones & drugs containing Al, Mg or Fe	J01A, J01M	P1.2	C5.2
57	Number of those that were evaluated for ADRs (nausea, vomiting, hypotensive, bradycardia, muscle weakness, drowsiness) Anticholinergics	Number of older people taking magnesium oxide	A06A	P2.1	C9.2
58	Number of those that were evaluated for ADRs (dry mouth, constipation, cognitive decline) Antidementia drugs	Number of older people taking anticholinergics	A02B, A03A, A03B, A03F, C01B, G04B, M03B, N04A, N05A, N05B, N06A, R06A	P2.1	C9.2
59	Number of those that were evaluated for ADRs (dizziness, drowsiness)	Number of older people with renal dysfunction taking memantine	N06D	P2.1	C3.2
60	Number of those that were evaluated for ADRs (drowsiness)	Number of older people taking memantine in the morning or noon	N06D	P2.1	C3.5
61	Number of those whose medications (memantine ≤ 1 mg/day) were evaluated	Number of older people with renal dysfunction taking > 1 mg/day of memantine	N06D	P2.1	C3.2
62	Number of those taking ≤ 10 mg/day of memantine	Number of older people with renal dysfunction, taking memantine	N06D	P2.1	C3.2
63	Number of those who received information about that new patch should be put in a different place on their skin	Number of older people taking rivastigmine (transdermal patch)	N06D	P2.1	C5.2
64	Number of those that were evaluated for ADRs (skin symptoms)	Number of older people taking rivastigmine (transdermal patch)	N06D	P2.1	C9.2
65	Number of those that were evaluated for ADRs (agitation, restlessness, irritability)	Number of older people taking ChEIs	N06D	P2.1	C9.2
66	Number of those that were evaluated for drug-drug interactions	Number of older people taking the following medications: ●ChEIs & NSAIDs ●ChEIs & a medical history of peptic ulcers	N06D	P2.1	C1.3

67	Number of those that were evaluated for drug-disease interactions (palpitation, arrhythmia)	Number of older people with cardiovascular disease, asthma, COPD or extrapyramidal symptoms, taking ChEIs	N06D	P2.1	C9.2
68	Number of those that were evaluated for drug-drug interactions	Number of older people taking the following medications: ●Donepezil & inhibitors of CYP3A4 ●Galantamine & inhibitors of CYP2D6	N06D	P2.1	C1.3
69	Number of those that were evaluated for drug-drug interactions (nausea, vomiting, bradycardia)	Number of older people taking the following medications: ●ChEIs & cholinergics ●ChEIs & other ChEIs for myasthenia gravis or glaucoma	N06D	P2.1	C1.3
70	Number of those whose medications (discontinue antipsychotics/TCAs/histamine receptor antagonists/anticholinergics for Parkinson disease) were evaluated	Number of older people taking the following medications: ●ChEIs & antipsychotics ●ChEIs & TCAs ●ChEIs & histamine receptor antagonists ●ChEIs & anticholinergics for Parkinson disease	N06D	P2.1	C1.3
71	Number of those without anticholinesterases (antipsychotics, TCAs, histamine receptor antagonists, anticholinergics for Parkinson disease)	Number of older people taking ChEIs	N06D	P2.1	C1.3
72	Number of those whose drug use process (patient, their family, carer) was checked	Number of older people taking ChEIs or memantine	N06D	P2.1	C7.1
73	Number of those who received proper support on management of their medicine (the use of pill calendars or pillbox)	Number of older people with dementia taking ChEIs or memantine, without any support from families or carers	N06D	P1.2	C7.1
74	Number of those whose esophageal disorders and inability (stand or sit upright for at least 30 minutes postdose) were checked	Number of older people taking bisphosphonates	M05B	P2.1	C7.9
75	Number of those whose intravenous bisphosphonate use (zoledronate) was checked	Number of older people taking oral bisphosphonates	M05B	P2.1	C1.4
76	Number of those who received information about the importance of regular dental check ups	Number of older people taking bisphosphonates or denosumab (6 monthly injection)	M05B	P2.1	C5.2
77	Number of those who received appropriate monitoring (severe hypocalcemia, the blood calcium test) in clinics within 3 months	Number of older people receiving denosumab (6 monthly injection)	Not available	P2.1	C9.1
78	Number of those whose ADL (a long period of inactivity, sitting, or bed rest) was evaluated	Number of older people taking raloxifene or bazedoxifene	G03X	P2.1	C1.1
79	Number of those whose treatment duration of teriparatide (initiation and completed date) was checked	Number of older people taking teriparatide	H05A	P2.1	C4.2
80	Number of those whose medications (discontinue bisphosphonates/calcium/vitamin D) were evaluated	Number of older people taking the following medications: ●Teriparatide & bisphosphonates ●Teriparatide & calcium ●Teriparatide & vitamin D	H05A	P2.1	C1.3
81	Number of those without taking bisphosphonates, calcium or vitamin D	Number of older people taking teriparatide (self-injection)	H05A	P2.1	C1.3
82	Number of those that were evaluated for ADEs (cognitive decline)	Number of older people taking the following medications: ●Vitamin D & calcium	A11C	P2.1	C1.3

83	Number of those whose medications (use alfacalcidol < 1 µg/day) were evaluated	Number of older people taking ≥ 1 µg/day of alfacalcidol	A11C	P2.1	C3.2
84	Number of those taking < 1 µg/day of alfacalcidol	Number of older people taking alfacalcidol	A11C	P2.1	C3.2
COPD drugs					
85	Number of those whose medications (discontinue oral steroids) were evaluated	Number of older people with chronic stable COPD taking oral steroids	H02A	P3.1	C1.1
86	Number of those whose medical history of angle closure glaucoma was checked	Number of older people taking LAMAs	R03A, R03B	P2.1	C1.1
87	Number of those that were evaluated for drug-disease interactions (worsening of dysuria)	Number of older people with benign prostatic hyperplasia, taking LAMAs	R03A, R03B	P2.1	C9.2
88	Number of those that were evaluated for ADRs (hypermagnesemia, tachycardia, trembling in the hands, hypokalemia, sleep disorder)	Number of older people taking LABAs	R03A, R03B	P2.1	C9.2
89	Number of those that were evaluated for drug-disease interactions (exacerbation of comorbidities)	Number of older people with hypertension, angina, hyperthyroidism, or diabetes, taking LABAs	R03A, R03B	P2.1	C9.2
90	Number of those that were evaluated for drug-drug interactions	Number of older people taking the following medications: ●Steroid inhalers or indacaterol & inhibitors of CYP3A4	R03A, R03B	P2.1	C1.3
91	Number of those that were evaluated for ADRs (theophylline toxicity)	Number of older people taking theophylline	R03D	P2.1	C9.2
92	Number of those who received appropriate monitoring (the blood concentration levels) in clinics within 6 months	Number of older people taking theophylline	R03D	P2.1	C9.1
93	Number of those that were evaluated for drug-drug interactions	Number of older people taking the following medications: ●Theophylline & inhibitors of CYP1A2	R03D	P2.1	C1.3
94	Number of those who received information about that they gargle and rinse their mouth with water after using an inhaler	Number of older people using steroid inhalers	R03A, R03B	P2.1	C1.3
95	Number of those whose inhaler techniques were evaluated	Number of older people using inhalers	R03A, R03B	P1.2	C7.10
Analgesics for cancer pain					
96	Number of those that were evaluated for ADRs (gastrointestinal hemorrhage, renal dysfunction)	Number of older people in palliative care taking NSAIDs	M01A, N02B	P2.1	C9.1
97	Number of those that were evaluated for ADRs (oversedation)	Number of older people in palliative care taking opioids	N02A	P2.1	C9.2
98	Number of those who received appropriate monitoring (a renal function) in pharmacies	Number of older people in palliative care taking morphine or codeine	N02A	P2.1	C9.1
99	Number of those that were evaluated for drug-drug interactions (drug-induced extrapyramidal symptoms)	Number of older people in palliative care taking the following medications: ●Opioids & prochlorperazine	N02A	P2.1	C1.3
100	Number of those that were evaluated for drug-drug interactions (respiratory depression, dizziness, hypotension, oversedation)	Number of older people in palliative care taking the following medications: ●Opioids & phenothiazines, barbiturates or benzodiazepines ●Opioids & TCAs ●Opioids & first-generation H1 antihistamines	N02A	P2.1	C1.3

101	Number of those that were evaluated for drug-drug interactions	Number of older people in palliative care taking the following medications: ●Oxycodone or fentanyl & inhibitors of CYP3A4	N02A	P2.1	C1.3
102	Number of those that were evaluated for ADRs (akathisia)	Number of older people in palliative care taking antipsychotics	N05A	P2.1	C9.2
103	Number of those that were evaluated for ADRs (dizziness, drowsiness)	Number of older people with renal dysfunction in palliative care taking pregabalin	N03A	P2.1	C3.2
104	Number of those whose pain intensity was checked	Number of older people in palliative care taking non-opioid analgesics or opioids	M01A, N02A, N02B	P1.1	C3.1
Other drugs					
105	Number of those that were evaluated for ADRs (digitalis toxicity)	Number of older people taking > 0.125 mg/day of digoxin	C01A	P2.1	C3.2
106	Number of those who received appropriate monitoring (the blood concentration levels, electrocardiography) in clinics within 3 months	Number of older people taking > 0.125 mg/day of digoxin	C01A	P2.1	C9.1
107	Number of those taking ≤ 0.125 mg/day of digoxin	Number of older people taking digoxin	C01A	P2.1	C3.2
108	Number of those who received appropriate monitoring (the blood concentration levels) in clinics within 3 months	Number of older people taking phenytoin or phenobarbital	N03A	P2.1	C9.1
109	Number of those whose overstock of the medicines at home were evaluated	Number of older people using topical drugs for pain or dry skin	M02A	P3.1	C7.6
110	Number of those whose therapeutic duplications were evaluated	Number of older people taking at least 2 medications from the same therapeutic group	ALL	P2.1	C1.4
Patient information					
111	Number of those whose background information (family, people living together, social services taken) was checked	Number of older people	N/A	P2.1	C7.8
112	Number of those whose current herbal/natural supplements or OTC medicines (consumptions, frequency) were checked	Number of older people	N/A	P2.1	C1.3
113	Number of those whose swallowing function was evaluated	Number of older people	N/A	P2.1	C7.9
114	Number of those whose renal function was evaluated	Number of older people	N/A	P2.1	C9.1
115	Number of those with a record of the immunisation status for influenza	Number of older people	N/A	P1.3	C1.5
116	Number of those with a record of the immunisation status for pneumococcus	Number of older people	N/A	P1.3	C1.5
117	Number of those whose drug use process (patient, their family, carer) was checked	Number of older people	N/A	P2.1	C7.1
118	Number of those for which medication reconciliation was conducted	Number of older people who had a transitional care	N/A	P1.2	C8.1
119	Number of those whose unused medicines were arranged by pharmacists	Number of older people with poor medication adherence	N/A	P1.2	C7.6
120	Number of those whose preferences towards deprescribing were evaluated	Number of older people	N/A	P2.1	C1.6
121	Number of those taking medicines ≤ 3 times in a day	Number of older people	N/A	P2.1	C3.4

a, Third level of ATC code; b, (possible) problem of drug related problems (PCNE Classification V9.1); c, (possible) causes of drug related problems (PCNE Classification V9.1);

ACE inhibitors, angiotensin converting enzyme inhibitors; ADE, adverse drug event; ADL, activities of daily living; ADR, adverse drug reaction; Al, aluminium; ARBs, angiotensin II receptor blockers; BPSD, behavioural and psychological symptoms of dementia; CCBs, calcium channel blockers; ChEIs, cholinesterase inhibitors; COPD, chronic obstructive pulmonary disease; CYP1A2, cytochrome P450 family 1 subfamily A member 2; CYP2C19, cytochrome P450 family 2 subfamily C member 19; CYP2C9, cytochrome P450 family 2 subfamily C member 9; CYP2D6, cytochrome P450 family 2 subfamily D member 6; CYP3A4, cytochrome P450 family 3 subfamily A; DOACs, direct oral anticoagulants; DPP-4 inhibitors, dipeptidyl peptidase 4 inhibitors; ICS/LABA, a combination of inhaled corticosteroid and long-acting beta2 agonist; Fe, iron; INR, international normalised ratio; LABAs, long-acting beta2-agonists; LAMAs, long-acting muscarinic antagonists; Mg, magnesium; NSAIDs, nonsteroidal anti-inflammatory drugs; OTC medicines, over-the-counter medicines; PPIs, proton pump inhibitors; SGLT2 inhibitors, sodium-glucose cotransporter-2 inhibitors; SSRIs, selective serotonin reuptake inhibitors; TCAs, tricyclic antidepressants.

Online supplemental appendix 2. Characteristics of interview participants

Characteristics (n=26)	n	(%)
Gender		
Male	15	(58)
Female	11	(42)
Ownership (%)		
Pharmacists	10	(38)
Pharmacy managers	9	(35)
Managers working at the head office	3	(12)
Owners	4	(15)
Pharmacy location		
Rural	8	(31)
Semi-urban	6	(23)
Urban	12	(46)
Size of pharmacy		
Independent (1 pharmacy)	9	(35)
Small-chain (2-9 pharmacies)	4	(15)
Medium-chain (10-99 pharmacies)	10	(38)
Big-chain (≥ 100 pharmacies)	3	(12)

Online supplemental appendix 3. Interview guide

1. Could you please tell me about your experiences in this study?
(When, what, to whom, why, how, what were the results)
 2. Given your experiences in this study, how do you think about quality improvement using QIs?
 3. Do you have any comment on QIs?
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Online supplemental appendix 4. Thematic analysis of the implementation of QIs

Themes	Positive impact	Negative impact	Barriers	Facilitators
Indicator characteristics	<ul style="list-style-type: none"> ● Identification of PIMs ● Detection of DRPs ● A sense of safety reassurance 	<ul style="list-style-type: none"> ● Less improvement in QIs with low applicability ● Unbelief 	<ul style="list-style-type: none"> ● Variation in difficulty ● Variability in interpretation of QI ● Low acceptability ● Limited access to data 	<ul style="list-style-type: none"> ● Enhanced support materials ● Clear definitions ● Regular review of QIs ● Continuity, time to become familiar with QI items
Web application	<ul style="list-style-type: none"> ● Attractiveness of data visualization ● Easy access to a database 	<ul style="list-style-type: none"> ● Bad data visualisation in QIs with low applicability 	<ul style="list-style-type: none"> ● Lack of data on dashboard ● Lack of understanding of web application 	<ul style="list-style-type: none"> ● Linkage to pharmacy record ● Development of new function ● Modified dashboards
Policy		<ul style="list-style-type: none"> ● A growing sense of frustration on the healthcare system 	<ul style="list-style-type: none"> ● Lack of financial incentives 	<ul style="list-style-type: none"> ● Linked to performance incentives ● Use an audit tool ● Fit with local government plans, initiatives, and policies
Patient	<ul style="list-style-type: none"> ● Building strong relationships with patients, families or helpers ● Improved patient satisfaction 	<ul style="list-style-type: none"> ● Increased a feeling of anxiety 	<ul style="list-style-type: none"> ● Disagreement with pharmacy services ● Reduced cognitive abilities 	<ul style="list-style-type: none"> ● Motivate and educate patients or their families ● Length of relationship, trust
Time		<ul style="list-style-type: none"> ● More time on counselling ● Increased workload for reporting 	<ul style="list-style-type: none"> ● Lack of time 	<ul style="list-style-type: none"> ● System support for reporting ● Pharmacy staff involvement
Competence	<ul style="list-style-type: none"> ● Increased skill and knowledge (documentation, communication, decision-making skills, leadership) ● Self-reflection on care ● High self-achievement, motivation to change ● Improved professionalism 	<ul style="list-style-type: none"> ● Frustration due to low score or no score change ● Increasing pressure to perform standard-care, redefinition of role expectations, time constraints, conflicting responsibilities 	<ul style="list-style-type: none"> ● Low confidence, low ability ● Not recorded in pharmacy record ● No interest of guidelines ● Strong preferences towards traditional role (dispensing) ● Short-term expectations of improving QI score 	<ul style="list-style-type: none"> ● Develop requisite knowledge, capacity to monitor care, clinical and decision-making skills ● Increase interest and responsibility of QIs ● Familiarisation with guidelines
Pharmacy administration	<ul style="list-style-type: none"> ● Meaningful benchmarking ● Shared Information with other pharmacies ● Increased importance of pharmacy record 	<ul style="list-style-type: none"> ● Glowing responsibility for pharmacy manager 	<ul style="list-style-type: none"> ● Lack of a team approach ● No scheduled meetings ● Neglecting to train both pharmacists and staff ● Tension existing between pharmacists and owners 	<ul style="list-style-type: none"> ● Team agreement on purpose, effectiveness, significance of initiatives ● Sufficient understanding and respect from owners ● Existence of experts in quality management ● Use of an educational tool
Collaboration	<ul style="list-style-type: none"> ● Sense of responsibility as a primary healthcare team 	<ul style="list-style-type: none"> ● Feeling frustrated and vulnerable 	<ul style="list-style-type: none"> ● Poor relationship with prescribes and interprofessional communication ● Poor system support to communicate with prescribes ● Doctors' receptivity to deprescribing 	<ul style="list-style-type: none"> ● Understanding pharmacist role by aligned healthcare professionals ● Investment in communication technology ● Multistakeholder involvement