

# DaysSupplyResponses

June 21, 2022

## 0.1 Days' Supply Assignment for Opioid Analgesics

```
[1]: di "Stata MP"  
      version  
      display "Notebook generated on $$_DATE at $$_TIME ET"  
      set more off  
      clear all  
      use pharmacistky
```

Stata MP

version 17.0

Notebook generated on 21 Jun 2022 at 13:09:24 ET

(MethodologicalAdvanc\_DATA\_NOHDRS\_2020-01-28\_1653.csv)

---

## 1 Sample Eligibility

Do they dispense opioid analgesics?

```
[2]: keep if dispense_cs==1  
      * Verify sample size  
      distinct record_id
```

(184 observations deleted)

	Observations	
	total	distinct
-----+-----		
record_id	643	643

---

### Completion of hydrocodone days' supply prompt

```
[3]: distinct record_id if ds_calc!=.
```

	Observations	
	total	distinct
record_id	347	347

Sample size n=347 for solid oral days' supply

---

### Completion of liquid morphine days' supply prompt

```
[4]: distinct record_id if liquid_ds!=.
```

	Observations	
	total	distinct
record_id	351	351

Sample size n=351 for liquid days' supply

---

### Limit sample to those who completed either days' supply question

```
[5]: keep if ds_calc!=. | liquid_ds!=.  
distinct record_id
```

(289 observations deleted)

	Observations	
	total	distinct
record_id	354	354

Final sample size n=354

---

### Label formats

```
[6]: label define yn 1 "yes" 0 "no"  
label define correct 1 "incorrect" 0 "correct"  
label define ou 1 "correct" 2 "underestimate" 3 "overestimate"  
label define over 1 "overestimate" 0 "correct"
```

## 2 Table 1: Descriptives

The following descriptives were considered based on available questions from the survey: + Gender + Terminal pharmacy practice degree + Practice setting + Years of practice experience + Typical number of prescriptions dispensed per week

```
[7]: tab degree
      mdesc degree
```

What is   your   terminal   degree?	Freq.	Percent	Cum.
BS Pharmacy	152	43.18	43.18
PharmD	200	56.82	100.00
Total	352	100.00	

Variable	Missing	Total	Percent Missing
degree	2	354	0.56

```
[8]: tab type_of_practice
      mdesc type_of_practice

      * Create new variable for independent chain pharmacy
gen indpharm = .
replace indpharm=1 if type_of_practice==2
replace indpharm=0 if type_of_practice!=2
replace indpharm=. if type_of_practice==.
```

Which of the following best   characterizes your primary practice   setting?	Freq.	Percent	Cum.
Community pharmacy - chain/supermarket/	142	40.34	40.34
Community pharmacy - independent	129	36.65	76.99
Health-system outpatient pharmacy	20	5.68	82.67
Long-term care pharmacy	12	3.41	86.08

Mail order or specialty pharmacy		6	1.70	87.78
Hospital inpatient pharmacy		38	10.80	98.58
Other		5	1.42	100.00
-----+-----				
Total		352	100.00	

Variable		Missing	Total	Percent Missing
-----+-----				
type_of_pr~e		2	354	0.56
-----+-----				

(354 missing values generated)

(129 real changes made)

(225 real changes made)

(2 real changes made, 2 to missing)

```
[9]: tab pracyear
      mdesc pracyear
```

Please				
indicate				
your total				
number of				
years in				
practice.		Freq.	Percent	Cum.
-----+-----				
< 5		43	12.29	12.29
5-15		99	28.29	40.57
16-25		73	20.86	61.43
26-35		66	18.86	80.29
> 35		69	19.71	100.00
-----+-----				
Total		350	100.00	

Variable		Missing	Total	Percent Missing
-----+-----				
pracyear		4	354	1.13
-----+-----				

```
[10]: la var no_of_rx "Average Rx per week dispensed"
       tab no_of_rx
```

```
mdesc no_of_rx
```

Average Rx   per week   dispensed	Freq.	Percent	Cum.
< 150	68	19.48	19.48
150-249	78	22.35	41.83
250-349	53	15.19	57.02
350-450	50	14.33	71.35
> 450	64	18.34	89.68
Unsure	36	10.32	100.00
Total	349	100.00	

Variable	Missing	Total	Percent Missing
no_of_rx	5	354	1.41

```
[11]: tab gender  
mdesc gender
```

What is your gender?	Freq.	Percent	Cum.
Male	171	48.86	48.86
Female	164	46.86	95.71
Prefer not to answer	14	4.00	99.71
Prefer to self-describe	1	0.29	100.00
Total	350	100.00	

Variable	Missing	Total	Percent Missing
gender	4	354	1.13

### 3 Figure 1: Days' Supply Considerations

Respondents were asked which of the following they took into account when assigning days' supply.

```
[12]: // Days' Supply considerations
la var ds_rsns___1 "Patient misuse or abuse"
note ds_rsns___1: Likelihood that patient misuses/abuses the prescription
notes ds_rsns___1
tab ds_rsns___1

la var ds_rsns___2 "Fill patterns"
note ds_rsns___2: Patient fill history patterns
notes ds_rsns___2
tab ds_rsns___2

la var ds_rsns___3 "PRN"
note ds_rsns___3: If the prescription is written on a scheduled or on an 'as_
↳needed' basis
notes ds_rsns___3
tab ds_rsns___3

la var ds_rsns___4 "Other CS"
note ds_rsns___4: Concomitant use of other controlled substances
notes ds_rsns___4
tab ds_rsns___4

la var ds_rsns___5 "Prescriber familiarity"
note ds_rsns___5: Familiarity with practitioner's prescribing patterns
notes ds_rsns___5
tab ds_rsns___5

la var ds_rsns___6 "Payer restrictions"
note ds_rsns___6: Third-party payer restrictions on days' supply
notes ds_rsns___6
tab ds_rsns___6

la var ds_rsns___7 "Schedule"
note ds_rsns___7: Schedule of the prescription (C-II to C- V)
notes ds_rsns___7
tab ds_rsns___7

la var ds_rsns___8 "Prescriber instructions"
note ds_rsns___8: Instructions from the prescriber regarding intended duration_
↳of the prescription
notes ds_rsns___8
tab ds_rsns___8
```

```

la var ds_rsns___9 "Gov't oversight"
note ds_rsns___9: System or government oversight of dispensing patterns
notes ds_rsns___9
tab ds_rsns___9

la var ds_rsns___10 "Other"
note ds_rsns___10: Other considerations
notes ds_rsns___10
tab ds_rsns___10

la var ds_rsns___11 "Do not consider"
note ds_rsns___11: I calculate days' supply without considering any of these
↳factors
notes ds_rsns___11
tab ds_rsns___11

* Free text responses from "other" respondents
list othr_dsrsn if othr_dsrsn!="", noh

```

ds\_rsns\_\_1:

1. Likelihood that patient misuses/abuses the prescription

Patient misuse or abuse	Freq.	Percent	Cum.
Unchecked	275	77.68	77.68
Checked	79	22.32	100.00
Total	354	100.00	

ds\_rsns\_\_2:

1. Patient fill history patterns

Fill patterns	Freq.	Percent	Cum.
Unchecked	211	59.60	59.60

Checked	143	40.40	100.00
-----+-----			
Total	354	100.00	

ds\_rsns\_\_\_3:

1. If the prescription is written on a scheduled or on an 'as needed' basis

PRN	Freq.	Percent	Cum.
-----+-----			
Unchecked	204	57.63	57.63
Checked	150	42.37	100.00
-----+-----			
Total	354	100.00	

ds\_rsns\_\_\_4:

1. Concomitant use of other controlled substances

Other CS	Freq.	Percent	Cum.
-----+-----			
Unchecked	230	64.97	64.97
Checked	124	35.03	100.00
-----+-----			
Total	354	100.00	

ds\_rsns\_\_\_5:

1. Familiarity with practitioner's prescribing patterns

Prescriber			
familiarity	Freq.	Percent	Cum.
-----+-----			
Unchecked	193	54.52	54.52
Checked	161	45.48	100.00
-----+-----			
Total	354	100.00	



ds\_rsns\_\_\_6:

1. Third-party payer restrictions on days' supply

Payer   restriction   s	Freq.	Percent	Cum.
-----+-----			
Unchecked	181	51.13	51.13
Checked	173	48.87	100.00
-----+-----			
Total	354	100.00	

ds\_rsns\_\_\_7:

1. Schedule of the prescription (C-II to C- V)

Schedule	Freq.	Percent	Cum.
-----+-----			
Unchecked	270	76.27	76.27
Checked	84	23.73	100.00
-----+-----			
Total	354	100.00	

ds\_rsns\_\_\_8:

1. Instructions from the prescriber regarding intended duration of the prescription

Prescriber   instruction   s	Freq.	Percent	Cum.
-----+-----			
Unchecked	83	23.45	23.45
Checked	271	76.55	100.00
-----+-----			
Total	354	100.00	

ds\_rsns\_\_9:

1. System or government oversight of dispensing patterns

Gov't oversight	Freq.	Percent	Cum.
Unchecked	302	85.31	85.31
Checked	52	14.69	100.00
Total	354	100.00	

ds\_rsns\_\_10:

1. Other considerations

Other	Freq.	Percent	Cum.
Unchecked	339	95.76	95.76
Checked	15	4.24	100.00
Total	354	100.00	

ds\_rsns\_\_11:

1. I calculate days' supply without considering any of these factors

Do not consider	Freq.	Percent	Cum.
Unchecked	303	85.59	85.59
Checked	51	14.41	100.00
Total	354	100.00	

- 34. | I'm not aware of anyone who feels it's appropriate to change the day .. |
- 44. | I follow my calculation of day supply. I check all factors as stated .. |
- 65. | Maximum dose allowed per day then divide into total quantity unless d.. |
- 83. | I use the sig to determine a max daily dose and go from there. |
- 98. | If patient is on hospice |

|-----|  
103. | Days supply is for billing and is calculated by the maximum dose in t.. |  
110. | My decision would depend upon the patient and prescriber. Having exp.. |  
139. | Max recommended of certain meds-ie 400mg tramadol per day |  
142. | Max of tylenol |  
192. | Most patients receiving immediate release Morphine are oncology patie.. |  
|-----|  
287. | When determining day supply all of the above must be taken into consi.. |  
288. | based on max daily written dose |  
307. | Prescribers expect as needed prescriptions be max dose days supply ca.. |  
310. | Meaning how the rx was written |  
+-----+

## 4 Table 2 - Hydrocodone

Survey prompt: *The calculation of days' supply for controlled substance prescriptions is not standardized and may vary based upon pharmacist interpretation and clinical judgment. This section seeks to better understand how pharmacists determine days' supply and the factors that might influence days' supply calculations.*

**Hydrocodone/Acetaminophen 5 mg/325 mg 1-2 tabs Q 4-6H PRN breakthrough pain #360** Correct answer is 30 days.

```
[13]: la var ds_calc "Days's Supply hydrocodone/APAP tablets"
      tab ds_calc
```

Days's Supply hydrocodone /APAP tablets	Freq.	Percent	Cum.
7	1	0.29	0.29
12	3	0.86	1.15
30	278	80.12	81.27
32	1	0.29	81.56
36	8	2.31	83.86
37	1	0.29	84.15
40	16	4.61	88.76
45	23	6.63	95.39
60	7	2.02	97.41
80	1	0.29	97.69
90	6	1.73	99.42
99	2	0.58	100.00
Total	347	100.00	

For hydrocodone tablets (n=347 responses), 19.9% (n=69) of pharmacists assigned inaccurate days' supply, ranging from 7 days to 90 days. Overestimation (n=65; 94.2% of incorrect; 18.7% of total) was more common than underestimation. Common mistakes were 40 and 45 days instead of the correct 30, Table 2.

## 5 Table 3 - Morphine

Morphine sulfate 10 mg/5 mL 2 tsp Q6H PRN breakthrough pain #280 mL Correct answer is 7 days.

```
[14]: la var liquid_ds "Days's Supply liquid morphine"
      tab liquid_ds
```

Days's Supply liquid morphine	Freq.	Percent	Cum.
2	1	0.28	0.28
3	1	0.28	0.57
4	1	0.28	0.85
5	2	0.57	1.42
6	2	0.57	1.99
7	316	90.03	92.02
8	2	0.57	92.59
10	8	2.28	94.87
14	7	1.99	96.87
20	1	0.28	97.15
28	2	0.57	97.72
30	5	1.42	99.15
35	2	0.57	99.72
90	1	0.28	100.00
Total	351	100.00	

For morphine solution (n=351 responses), days' supply was inaccurate in 10.0% (n=35), ranging from 2 to 90 days. Overestimation (n=28; 80% of incorrect; 8.0% of total) was more frequent than underestimation. Common mistakes were 10 and 15 days instead of the correct 7, Table 3.

## 6 Manuscript Text: Correct Days Supply

Three outcome variables are constructed: + Dichotomous correct vs. incorrect + 3-level correct, underestimate, overestimate + Dichotomous overestimate vs. correct

```
[15]: // Dichotomous indicator for correct answers
* hydrocodone
gen hydperf=.
replace hydperf=0 if ds_calc==30
replace hydperf=1 if ds_calc!=30
replace hydperf=. if ds_calc==.
la var hydperf "Perfect Days Supply hydrocodone"
label values hydperf correct
tab hydperf
mdesc hydperf

* morphine
gen morperf=.
replace morperf=0 if liquid_ds==7
replace morperf=1 if liquid_ds!=7
replace morperf=. if liquid_ds==.
la var morperf "Perfect Days Supply morphine"
label values morperf correct
tab morperf, m
mdesc morperf

// 3-level indicator for over/underestimate
* hydrocodone
gen hydou=.
replace hydou=1 if ds_calc==30
replace hydou=2 if ds_calc<30
replace hydou=3 if ds_calc>30
replace hydou=. if ds_calc==.
la var hydou "Days Supply Calculation"
label values hydou ou
tab hydou, m
mdesc hydou

*morphine
gen morou=.
replace morou=1 if liquid_ds==7
replace morou=2 if liquid_ds<7
replace morou=3 if liquid_ds>7
replace morou=. if liquid_ds==.
la var morou "Days Supply Calculation"
label values morou ou
tab morou, m
```

```
mdesc morou
```

(354 missing values generated)

(278 real changes made)

(76 real changes made)

(7 real changes made, 7 to missing)

Perfect			
Days Supply			
hydrocodone	Freq.	Percent	Cum.
correct	278	80.12	80.12
incorrect	69	19.88	100.00
Total	347	100.00	

Variable	Missing	Total	Percent Missing
hydperf	7	354	1.98

(354 missing values generated)

(316 real changes made)

(38 real changes made)

(3 real changes made, 3 to missing)

Perfect			
Days Supply			
morphine	Freq.	Percent	Cum.
correct	316	89.27	89.27
incorrect	35	9.89	99.15
.	3	0.85	100.00

Total | 354 100.00

Variable	Missing	Total	Percent Missing
morperf	3	354	0.85

(354 missing values generated)

(278 real changes made)

(4 real changes made)

(72 real changes made)

(7 real changes made, 7 to missing)

Days Supply Calculation	Freq.	Percent	Cum.
correct	278	78.53	78.53
underestimate	4	1.13	79.66
overestimate	65	18.36	98.02
.	7	1.98	100.00
Total	354	100.00	

Variable	Missing	Total	Percent Missing
hydou	7	354	1.98

(354 missing values generated)

(316 real changes made)

(7 real changes made)

(31 real changes made)

(3 real changes made, 3 to missing)



Days Supply Calculation	Freq.	Percent	Cum.
correct	316	89.27	89.27
underestimate	7	1.98	91.24
overestimate	28	7.91	99.15
.	3	0.85	100.00
Total	354	100.00	

Variable	Missing	Total	Percent Missing
morou	3	354	0.85

### 6.1 Assess overlap between correct DS for 2 drugs

\* Perfect responses among those who answered both prompts  $\text{distinct record}_{difds\_calc} = 30 \text{liquid}_{as} = 7 \text{distinct record}_{difds\_calc!} = . \text{liquid}_{as!} = . * 75.3$

\* Who got both wrong?  $\text{distinct record}_{difds\_calc!} = 30 \text{liquid}_{as!} = 7 \text{ds\_calc!} = . \text{liquid}_{as!} = . * 4.4$  When considering the prompts together, 75.3% (n union = 259/344) of pharmacists provided the correct days' supply for both. Only 4.4% got both wrong (n = 15).

```
[16]: pvenn morperf hydperf
graph export vennperfect.eps, replace
```

Perfect Days Supply morphine	Freq.	Percent	Cum.
correct	316	90.03	90.03
incorrect	35	9.97	100.00
Total	351	100.00	

Perfect Days Supply morphine	Perfect Days Supply hydrocodone correct	Perfect Days Supply hydrocodone incorrect	Total
correct	259	52	311
incorrect	18	15	33

```

      Total |      277      67 |      344
morperf: 35
hydperf: 67
Population C: 0
AB Overlap: 15
AC Overlap: 0
BC Overlap: 0
Total population: 351
Draw total population rectangle (0,not; 1, yes): 1
Rotation angle of circle B: 0
Relative position of circle C (1,clockwise; -1,counterclockwise): 1

```

file vennperfect.eps saved as EPS format

```
[17]: * Independence of hydrocodone and morphine correct?
tab hydperf morperf, chi row
```

```

+-----+
| Key          |
|-----|
| frequency    |
| row percentage |
+-----+

Perfect |
Days |
Supply | Perfect Days Supply
hydrocodon | morphine
e | correct incorrect | Total
-----+-----+-----
correct | 259 18 | 277
| 93.50 6.50 | 100.00
-----+-----+-----
incorrect | 52 15 | 67
| 77.61 22.39 | 100.00
-----+-----+-----
Total | 311 33 | 344
| 90.41 9.59 | 100.00

```

Pearson chi2(1) = 15.7065 Pr = 0.000

---

## 7 Figure 2: Reasons pharmacists consider accuracy of days supply calculations to be important.

```
[18]: la var impor_ds___1 "Payer requirement"
note impor_ds___1: Satisfy 3rd party payer requirements
notes impor_ds___1
tab impor_ds___1

la var impor_ds___2 "Rules"
note impor_ds___2: Satisfy DEA regulations and KY Board of Pharmacy Rules
notes impor_ds___2
tab impor_ds___2

la var impor_ds___3 "Doctor shopping in KASPER"
note impor_ds___3: Ensure accurate assessment of doctor shopping behavior in
→KASPER
notes impor_ds___3
tab impor_ds___3

la var impor_ds___4 "MME in KASPER"
note impor_ds___4: Ensure accurate calculation of morphine milligram equivalents
→in KASPER
notes impor_ds___4
tab impor_ds___4

la var impor_ds___5 "Refill time"
note impor_ds___5: Determine when medication is due to be filled/refilled
notes impor_ds___5
tab impor_ds___5

la var impor_ds___6 "Patient safety"
note impor_ds___6: Support safe medication use for patients
notes impor_ds___6
tab impor_ds___6
```

```
impor_ds___1:
  1. Satisfy 3rd party payer requirements
```

Payer   requirement	Freq.	Percent	Cum.
-----+----- Unchecked	89	25.14	25.14

Checked	265	74.86	100.00
-----+-----			
Total	354	100.00	

impor\_ds\_\_\_2:

1. Satisfy DEA regulations and KY Board of Pharmacy Rules

Rules	Freq.	Percent	Cum.
-----+-----			
Unchecked	86	24.29	24.29
Checked	268	75.71	100.00
-----+-----			
Total	354	100.00	

impor\_ds\_\_\_3:

1. Ensure accurate assessment of doctor shopping behavior in KASPER

Doctor			
shopping in			
KASPER	Freq.	Percent	Cum.
-----+-----			
Unchecked	127	35.88	35.88
Checked	227	64.12	100.00
-----+-----			
Total	354	100.00	

impor\_ds\_\_\_4:

1. Ensure accurate calculation of morphine milligram equivalents in KASPER

MME in			
KASPER	Freq.	Percent	Cum.
-----+-----			
Unchecked	135	38.14	38.14
Checked	219	61.86	100.00
-----+-----			
Total	354	100.00	

impor\_ds\_\_\_5:

1. Determine when medication is due to be filled/refilled

Refill time	Freq.	Percent	Cum.
-----+-----			
Unchecked	33	9.32	9.32
Checked	321	90.68	100.00
-----+-----			
Total	354	100.00	

impor\_ds\_\_\_6:

1. Support safe medication use for patients

Patient	Freq.	Percent	Cum.
safety			
-----+-----			
Unchecked	68	19.21	19.21
Checked	286	80.79	100.00
-----+-----			
Total	354	100.00	

---

*fin.*