

2022 Monash Health Pharmacy Intern Roster

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This is a comprehensive summary of the current optimisation problem modelling the 2022 Monash Health Pharmacy Intern Roster.

12 interns are rostered to 21 pharmacy rotations (incl. annual leave) across 52 weeks, with other activities such as late shifts and weekend/public holiday work.

The weekly rotations are:

- Inpatients: Non-aseptic preparation
- Monash Children's Hospital - Clinical Pharmacy
- Aseptic Preparation
- Medicines Information
- Clinical Pharmacy Dandenong - Vascular
- Clinical Pharmacy Dandenong - Mental Health
- Clinical Pharmacy Dandenong - General Medicine
- Clinical Pharmacy Casey - General Medicine
- Clinical Pharmacy Clayton - General Medicine
- Clinical Pharmacy Casey- Emergency Department
- Clinical Pharmacy Moorabbin
- Clinical Pharmacy Kingston
- Clinical Pharmacy Clayton
- Hospital Outreach Medication Review (HOMR), Anasthetic Assessment Clinic, Acute Pain Round
- Quality use of medicines
- Dispensary Clayton
- Dispensary Dandenong
- Dispensary Kinston
- Dispensary Moorabbin
- Dispensary Casey
- Annual Leave

Except where otherwise stipulated, rotations take place at Monash Medical Centre Clayton Campus.

Rotation	Intern Capacity	Number of Weeks	Consecutive required
Inpatients	2	5	
Monash Children's	1	2	Yes
Aseptic	1	3	2 weeks only
Med. Info.	1	4	2 week blocks
Dandenong - Vascular	1	4	Yes
Dandenong - Mental Health	1	2	Yes
Dandenong - General Medicine	1	7	Yes
Casey - General Medicine	1		
Clayton - General Medicine	1		
Casey - ED	1	2	Yes
Moorabbin Clinical Pharmacy	1	3	Yes
Kingston Clinical Pharmacy	1	3	Yes
Clayton Clinical Pharmacy	6	4	Yes
HOMR	1	1	
QUM	2	2	
Dispensary Clayton	2	6	
Dispensary Dandenong	1		
Dispensary Kingston	1		
Dispensary Moorabbin	1		
Dispensary Casey	1		
Annual Leave		4	2 weeks only

Table 1: For General medicine, 7 weeks are completed at one of the 3 sites listed. For Dispensary, the sum across the sites is equal to 6 weeks.

Constraints

These are the conditions that must be adhered to, currently built in the model and apply for all interns.

- Annual Leave
 - Each intern gets a total of 4 weeks annual leave, with:
 - * 1 week between weeks 17 & 22 inclusive.
 - * 1 week between weeks 34 & 40 inclusive.
 - * 2 consecutive weeks between weeks 47 & 52 inclusive.
- Rotation particulars:
 - Each intern can only do 1 weekly rotation at a time.
 - Each rotation has a capacity as to the number of interns that can do it in any given week.
 - Each intern must satisfy a requisite number of weeks spent in each rotation.
 - Some rotations must be consecutive.
 - For the first four week, Dispensary capacity at Clayton is increased to 4, and Dispensary capacity at Dandenong & Casey is increased to 2.

These rotation conditions are summarised in Table 1.

- Rotation Specifics:
 - Inpatients:
 - * 1 week must be completed by Week 6.
 - * 2 weeks must be completed by Week 18.
 - Aseptic Manufacturing:

- * 2 consecutive weeks completed by Week 36.
- * 1 week between Weeks 37 & 52.
- Medicines Information:
 - * 2 consecutive weeks between Weeks 5 & 28.
 - * 2 consecutive weeks between Weeks 29 & 52.
- General Medicine:
 - * 4 interns complete at each of Clayton, Dandenong and Casey.
- Clinical Pharmacy Clayton:
 - * No rotations before Week 26.
- HOMR:
 - * 1 weeks between Weeks 5 & 30.
- QUM:
 - * At least 1 week by Week 21.
 - * 2 weeks completed by Week 39.
- Dispensary:
 - * At least 3 weeks of dispensary rotations in the first 4 weeks.
 - * No more than 2 weeks in Clayton Dispensary in the first 4 weeks.
 - * No more than 1 week in each of the other dispensaries in the first 4 weeks.

The aim here is to ensure the interns get to experience as many different dispensaries as possible during orientation.
- Weekend shifts:
 - 2 interns are rostered at Clayton and 1 intern is rostered at Dandenong for each Saturday and Sunday.
 - An intern works no more than 2 weekends in a row. (N.B. This does not include Public Holidays.)
 - An intern works a maximum of 1 shift in a weekend.
 - An intern works no more than 26 weekend shifts in a year.
 - In the first 6 weeks, each intern is orientated into each of the three weekend shift roles (at Clayton and Dandenong).
 - Interns are paired up for weekend shift, with the pairs changing twice in the years.

Pair periods are from Weeks 6 to 21, Weeks 22 to 37 and Weeks 38 to 52.
- Time in lieu (TOIL):
 - If an intern works a Saturday shift, they receive TOIL on the Monday of the following week.
 - If an intern works a Sunday shift, they receive TOIL on the Tuesday of the following week.
 - To avoid TOIL, no intern works a weekend before a HOMR, QUM or Annual Leave rotation.
- Accrued Days Off (ADO):
 - An intern accrues 12 ADOs throughout the year.
 - No ADO occurs in the 4 weeks.
 - October ADOs are allocated manually.
 - TIL and ADOs are not permitted to occur in the same week.

- Annual leave and ADOs are not permitted to occur in the same week.
- Seminar Days and ADOs are not permitted to occur in the same week.
- ADOs occur only on Wednesdays and Fridays.
- ADOs are spaced out throughout a year, ideally once a month: they are permitted to occur late, but never early.
- Late Shifts:
 - One intern is allocated to late shift from Weeks 5 to 52.
 - Each intern works 4 late shifts in a year.
 - No interns work late shift in the first 4 weeks.
 - Late Shifts can only occur when an intern doing the following rotations:
 - * Inpatients
 - * Aseptic manufacturing
 - * Medicines information
 - * Clayton Dispensary
- Public Holidays
 - No ADOs are allocated during weeks with public holidays.
 - 2 interns are rostered at Clayton and 1 intern is rostered at Dandenong for each public holiday.
 - Interns are paired in the same way as they are for Weekend shifts.
 - An intern is not rostered for a public holiday if they are on annual leave.
 - An intern works no more than 3 public holidays in a year.

Objectives

Unlike constraints, objectives can be violated. The model attempts to minimise violations.

Minimise:

- HOMR and QUM rotations in weeks that contain Seminar Days and Public Holidays.
- TOIL and Late Shifts occurring in the same week.
- ADOS and Late Shifts occurring in the same week.

Maximise:

- Dispensary rotations in the first 6 weeks.
- Late shifts when an intern is doing the Clayton Dispensary rotation.