

ACR Well-Being Curriculum for Radiology Residency Programs

1. Attention to scheduling, work intensity, and work compression that impacts resident well-being

In 2017, the Accreditation Council for Graduate Medical Education (ACGME) revised Section VI of its Common Program Requirements for all accredited residency and fellowship programs, regardless of specialty, to address well-being more directly and comprehensively. The requirements emphasize that psychological, emotional, and physical well-being are critical in the development of the competent, caring, and resilient physician.

The ACR joins the ACGME in prioritizing physician well-being. The curriculum for radiology residency program leaders provides resources and experiential exercises to strengthen your residency and meet the VI.C. Well-Being requirements.

ACGME VI.C. Well-Being Requirement	ACR Learning Objectives
<p>The responsibility of the program, in partnership with the Sponsoring Institution, to address well-being must include:</p> <p>VI.C.1.b) Attention to scheduling, work intensity, and work compression that impacts resident well-being.</p>	<ul style="list-style-type: none"> Identify scheduling best practices including factors that impact the well-being of residents. Demonstrate ability to adapt resident schedules and workloads to meet the changing needs and life events of residents. Design a schedule for residents that allows for personal needs.

These activities are intended for program directors/coordinators, assistant/associate program directors, chief residents, and those responsible for resident scheduling.

Instructions:

1. Read the following article.
 - a. [Residency Schedule, Burnout and Patient Care Among First-Year Residents](#), which evaluates which elements of the residency schedule were associated with resident burnout and fatigue and whether resident burnout and fatigue were associated with lower perceived quality of patient care.

2. Complete exercise 1 in the Considering Resident Wellness in Scheduling/Workload module below.

3. Read the following articles.
 - a. [Using Wellness Days to Mitigate Resident Burnout](#), an institution-specific study that looks at the use of scheduled sick or wellness days.
 - b. [Sink or Night Float](#), a study that demonstrates the results of a 12-hour night float system, versus a traditional 24-hour night float system.



4. Read “Wellness Days” and complete exercise 2 in the Considering Resident Wellness in Scheduling/Workload module.
5. Read the following article.
 - a. [Resident Case Volume Correlates with Clinical Performance](#), a study that examines whether the total number of studies interpreted during radiology residency correlates with clinical performance as measured by objective criteria.
6. Read “Work Intensity” and complete exercise 3 in the Considering Resident Wellness in Scheduling/Workload module.
7. Read the following articles.
 - a. [Factors Related to Physician Burnout and Its Consequences](#), a review that covers the contributing factors leading to physician burnout and its consequences for the physician’s health, patient outcomes, and the healthcare system.
 - b. [Work Compression in the Era of Duty Hour Restrictions](#), which evaluates the need for solutions that address the problems associated with work compression to fully achieve the goals of residency duty hour reform.
8. Read “Work Compression” and complete exercise 4 in the Considering Resident Wellness in Scheduling/Workload module.

Considering Resident Wellness in Scheduling/Workload

Carolynn M. DeBenedectis, MD

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Objectives:

This module is intended for Program Directors/Coordinators, Assistant/Associate Program Directors, Chief Residents, and those responsible for resident scheduling.

1. Identify scheduling best practices including factors that impact the well-being of residents
1. Demonstrate ability to adapt resident schedules and workloads to meet the changing needs and life events of residents
2. Design a schedule for residents that allows for personal needs

Exercise 1: Which resident schedule is **least** likely to lead to burnout?

Resident A

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8am-5pm	ED call	chest	chest	chest	chest	chest	
5pm-2am		ED float		ED Float			ED float
8pm-8am							

Resident B

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8am-5pm							
5pm-2am							
8pm-8am	Nightfloat	Nightfloat	Nightfloat	Nightfloat	Nightfloat	Nightflort	

Resident C

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8am-5pm		mammo	mammo	mammo	mammo	mammo	
5pm-2am							
8pm-8am							

Resident D

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8am-5pm	ED call	body	body	body	body	body	chest call
5pm-2am							
8pm-8am							

Exercise 1: Follow Up Questions

- Consider the requirements of each schedule and discuss the ways in which each schedule could lead to burnout.
- Which schedule do you think is the least likely to lead to burnout, and why?

Exercise 1 Answer: Which resident schedule is least likely to lead to burnout?

Resident A

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8am-5pm	ED call	chest	chest	chest	chest	chest	
5pm-2am		ED float		ED Float			ED float
8pm-8am							

Resident B

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8am-5pm							
5pm-2am							
8pm-8am	Nightfloat	Nightfloat	Nightfloat	Nightfloat	Nightfloat	Nightflort	

Resident C

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8am-5pm		mammo	mammo	mammo	mammo	mammo	
5pm-2am							
8pm-8am							

Resident D

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8am-5pm	ED call	body	body	body	body	body	chest call
5pm-2am							
8pm-8am							

- This table describes the scheduling factors associated with burnout
- Based on this, schedule **C** is the least likely to result in burnout
 - Working 45 hrs
 - Has 2 days off
 - No overnight shifts
- Schedule A has the resident working >80 hrs
- Schedule B has the resident on all overnight shifts
- Schedule D does not have a day off in the entire week

Exercise 1: Answers and Discussion

Table 3 Factors associated with burnout score

Factors	Unadjusted model β coefficient (SE)	Adjusted model† β coefficient (SE)
Overnight rotation	6.6*** (1.5)	3.4* (1.7)
Hours worked	0.2** (0.1)	0.03 (0.1)
Fatigue score	0.5** (0.1)	0.3 (0.1)
Working over 80 h	3.3 (2.3)	0.02 (2.1)
Days off	1.4 (1.0)	1.7 (0.9)
Leaving on time	0.5 (1.8)	-0.01 (1.6)
Adherence to ACGME guidelines	-0.9 (1.7)	1.9 (1.7)
Programme 2 vs programme 1	-5.9** (1.6)	
Programme 3 vs programme 1	-7.7*** (1.8)	

*p<0.05; **p<0.01; ***p<0.001.

†Adjusted for age, sex and residency programme.

ACGME, Accreditation Council for Graduate Medical Education.

Block L, Wu AW, Feldman L, Yeh HC, Desai SV. Residency schedule, burnout and patient care among first-year residents. *Postgrad Med J*. 2013;89:495–500.

Wellness Days

- The goal of wellness days is to provide residents added flexibility when seeking medical, mental health, or dental care appointments and other self-care activities
- Programs can allot a set number of these days for residents to use as they see fit or need
- One study found that those who reported burnout had a statistically significant higher rate of calling in sick (78.5%) compared with those who did not report burnout (58.1%) ($P = .0023$)
 - Although there was a tendency for the nonburnout group to use WDs more (71.4%), this was not statistically significant compared with the burnout group (45.1%) ($P = .29$)

Table 1. Results of resident survey and review of online institutional scheduling software

Class	Burnout Rate*		
R1	0%		
R2	40.0%		
R3	58.3%		
R4	23.1%		
Total (n = 45)	31.1%		

	AY 2016-2017 [†]	AY 2017-2018 [†]	P Value [‡]
SDs taken	130	72	
Average SDs (days/person)	3.6	2.4	.0002
WDs taken	0	34	
Average WDs (days/person)	0	1.6	
SDs and WDs taken	130	106	
Average SDs and WDs (days/person)	3.6	2.9	.11

Note: AY = academic year; SD = sick day; WD = wellness day.

*Burnout is defined here as a response of 3, 4, or 5 on a validated single-question assessment as above [9].

[†]AY 2016-2017 = October 1, 2016, to June 1, 2017; AY 2017-2018 = October 1, 2017, to June 1, 2018.

[‡]P values are shown for paired Student's *t* test. Significant value is in boldface type.

Exercise 2: Design a 1 month schedule that allows for personal needs

- Think of or reference a typical resident schedule at your program and create a hypothetical schedule for next month
- What kind of person is this resident (e.g., parent, single without kids, resident with elderly parent, resident with ongoing illness, etc.) and what needs might they have?
 - You can have a real person in mind or make up a persona
- Print out the schedule template on the next slide or [download a template](#) from Microsoft Office.com

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		
		Notes				

Exercise 2: Follow Up Questions

- Does the schedule you created have elements that could lead to burnout?
 - Are these elements necessary? If so, why?
 - If necessary, have they been minimized?
- Does this schedule take the specific needs of your resident into account?
 - If not, what limitations prevent you from doing so?

Exercise 2: Scheduling Considerations

- Schedule <80 hour work weeks
- Minimize overnight call and weekends
- Make sure residents have at least one day off a week
- Include wellness days for residents to attend to personal needs
- Include non-traditional work hours: 4pm-10pm shifts allow residents to attend doctor's appointments, etc. which they cannot do during a traditional 8am-5pm shift
 - Consider, however, that shifts like these may be difficult for parents as it can cause a childcare conflict

Sample Schedule with Wellness Considerations

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 <input type="checkbox"/> 8am-5pm mammo	2 8am-5pm mammo	3 8am-5pm mammo	4 8am-5pm mammo	5
6 ED Call 8am-5pm	7 8AM-5PM mammo	8 8am-5pm mammo	9 8am-5pm mammo	10 8am-5pm mammo	11 8am-5pm mammo	12
13	14 ED float 4pm-10pm	15 →	16 →	17 →	18 wellness day	19
20	21 8AM-5PM MSK	22 →	23 →	24 →	25 →	26
27	28 5pm-8am night float	29 →	30 →	31 →		
		Notes				

Exercise 2: Discussion of Sample Schedule

The schedule contains the following wellness considerations:

- Only one weekend day scheduled in the month (minimized working weekends)
- Only one week of night shifts
- One week of alternative shift so that the resident has daytime/business hours for personal appointments and errands
- There is one wellness day scheduled for the month

Work Intensity

- **Work Intensity** refers to optimal resident volumes for learning.
- “The more you see the more you learn” is only effective up to a certain point. Once you exceed this volume, it can actually be detrimental to learning.

Exercise 3: Examine Work Intensity

- How does your program monitor resident volumes?
- What do you do if you have a resident(s) whose volume exceeds “the sweet spot?”
- What do you do with the extra volume of studies that residents cannot read?

Exercise 3: Work Intensity Discussion

- Using PACS or EMR dashboards or other modes of keeping track of resident volumes can be helpful for residents and program directors day to day.
- Collect and review resident volumes at biannual one-on-one meetings with the program director to monitor for volumes above the “sweet spot.”
- If residents exceed the sweet spot, encourage residents to examine their daily reading habits and decrease the volume they are reading.
 - The program director can also monitor this to ensure they are doing so.
- Extra work can be read by other residents (with low volumes), fellows, attending or moonlighting attendings.

As the number of interpreted films increased to approximately 16,000, clinical performance ($p=0.004$) and test performance ($p=0.01$) improved, but volumes over 16,000 correlated with worse performance.

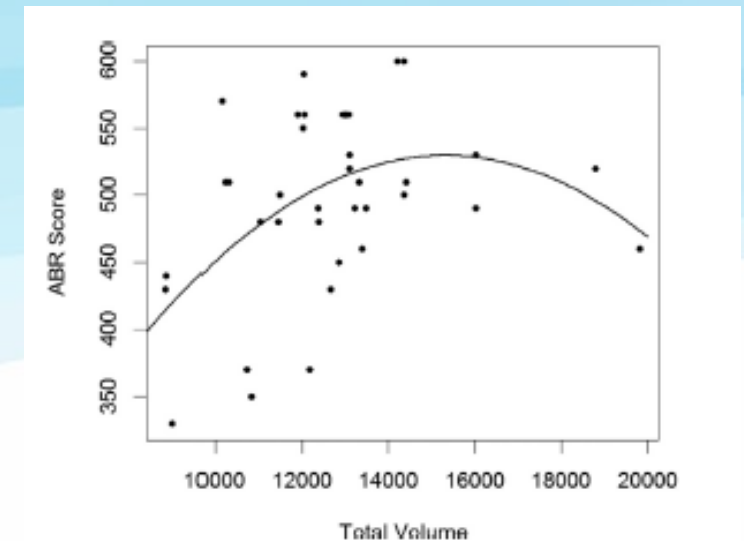


Figure 2. Relationship of total volume of studies interpreted to ABR Core Exam score.

Work Compression

- Residents spend fewer hours in the hospital, but their clinical workload and educational requirements have not decreased proportionally, resulting in an even more frenetic pace of work — a phenomenon known as **work compression**.

Exercise 4: Addressing for Work Compression

- Brainstorm a few ways your program could allow residents to see a greater variety of cases that would not result in them increasing their pace of work.

Exercise 4: Work Compression Discussion

- Interesting case conferences
 - Once a week, showcase all the interesting cases seen in the department that week.
 - This allows residents to see a larger variety of cases without adding them to their workload.
- Daily interesting case round
 - Set aside 30 min at the end of every work day to show the interesting cases seen in the section that day.
- Interesting case database
 - This allows residents to have access to interesting cases they might not otherwise see and they can review them on their own time.

References:

1. [Block L, Wu AW, Feldman L, Yeh HC, Desai SV.](#) Residency schedule, burnout and patient care among first-year residents. *Postgrad Med J.* 2013;89:495–500.
2. [Mendoza D, Holbrook A, Bertino F, Theriot D, Ho C.](#) Using wellness days to mitigate resident burnout. *JACR.* 2019;16(2):221–223.
3. [Scali EP, Strovski E, Forster BB, Mar C, Chang SD.](#) Sink or night float: University of British Columbia radiology residents' experience with overnight call. *Can Assoc Radiol J.* 2015;66:185-189.
4. [Agawal V, Bump GM, Heller MT, et al.](#) Resident case volume correlates with clinical performance: finding the sweet spot. *Acad Radiol.* 2019;26(1):136-140.
5. [Patel RS, Bachu R, Adikey A, Malik M, Shah M.](#) Factors related to physician burnout and its consequences: a review. *Behav Sci (Basel).* 2018;8(98):1-7.
6. [Sen S, Nichols B, Didwania AK.](#) Work compression in the era of duty hour restrictions. *JAMA Intern Med.* 2013;173(19):1844–1845.