

Evaluating the resident call structure in Canadian diagnostic radiology postgraduate medical education programs

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Background

Independent call in diagnostic radiology (DR) postgraduate medical education (i.e. residency) training has become increasingly demanding.^{1,2}

Members of the Canadian Association of Radiologists Resident and Fellow Section (CAR RFS) and the Canadian Association for Interventional Radiology Resident, Fellow and Student Section (CAIR RFS) have found:

- A generally negative outlook on the call experience among residents across the country.
- A lack of knowledge from residents on the call structures in other programs.

Overall, lack of knowledge regarding other programs' call systems is a major barrier of advocacy efforts looking to improve resident on-call experience.

Methods

Primary objective: Collect the call structure information for all DR residency programs in Canada.

Design

Questionnaire-based study about the residency call structures in each of the 16 DR residency programs across Canada.

Distribution

Sent via email in October 2022 to the CAR RFS representatives as well as to the senior/chief/lead residents of the 16 DR residency programs to be completed by December 2022.



The questionnaire
can be accessed
by scanning the
following QR code.



The following data were inquired in the questionnaire:

- **Institutional information:** location; affiliated university and associated hospitals; city and catchment size; resident body demographics.
- **Call structure:** shift type (e.g. night float, 24-hour shifts); when independent call starts and ends; presence of graduated call; ability for home call/remote PACS access.
- **Call responsibilities:** required modalities; procedural responsibilities; preliminary report requirements; protocoling responsibilities.
- **Call support:** attending, fellow (if applicable), and technologist support.
- **Preparation for call:** dedicated resources for solo call prep; buddy call system.
- **Pre- and post-call:** any pre-call time off; post-call review process; call performance evaluation.

Results: Call Structure



← Full institutional information and description for all 16 DR residency programs.



← Detailed description of the call structure in each of the 16 DR residency programs.

Table 1 Start of independent call in each DR residency program.

■ : before PGY2 ■ : Jul-Aug PGY2 ■ : Sept-Oct PGY2 ■ : Nov-Dec PGY2 ■ : Jan PGY2 or after

UBC	UofA	UofC	UofS	UM	UWO	Mac	UofT
		*					
QU	UO	MU	UdeM	UdeS	UL	Dal	MUN
**							

* Independent days Dec PGY2. Independent nights Jan PGY2.

** QU was the only program operating under Competence by Design (CBD) model for the current cohort of residents starting independent call.

Table 2 End of independent call in each DR residency program.

■ : before Nov PGY5 ■ : Nov PGY5 ■ : Dec PGY5 ■ : Jan PGY5 ■ : after Jan PGY5

UBC	UofA	UofC	UofS	UM	UWO	Mac	UofT
QU	UO	MU	UdeM	UdeS	UL	Dal	MUN
					*		

* Occasionally can take call until 2 weeks before Royal College exam (in March).

Results: Responsibilities

Table 7 Comprehensiveness of preliminary report required by on-call resident in each DR residency program.

■: Verbal report with only the pertinent finding(s): No description at all (e.g. "nil acute").

■: Basic preliminary with just the impression: Pertinent finding(s) conveyed with an impression but no report body required.

■: Structured report without incidentals: Has body and impression but not formally required to discuss incidental findings not immediately relevant to the clinical question.

■: Full report: Structured report with all findings included. Identical or near identical in complexity to formal report.

UBC	UofA	UofC	UofS	UM	UWO	Mac	UofT
*							
QU	UO	MU	UdeM	UdeS	UL	Dal	MUN

"Full reports" at SPH and "basic preliminary with just an impression" at VGH.

Table 8 Modalities for which on-call resident is responsible at each DR residency program.

■: responsible ■: not responsible

	UBC	UofA	UofC	UofS	UM	UWO	Mac	UofT
CT								
US								
XR	*							
MR (Neuro)	*							
MR (Body)	*							
	QU	UO	MU	UdeM	UdeS	UL	Dal	MUN
CT								
US								
XR		*						
MR (Neuro)					**			
MR (Body)					**			

* Only during peds call during peds block. ** Only senior residents are responsible.

Table 9 Study requests that are auto-protocolled during resident call at each DR residency program.

■: routinely ■: sometimes (e.g. if ordered by ER) ■: never

	UBC	UofA	UofC	UofS	UM	UWO	Mac	UofT
NECT head	■	■	■	■	■	■	■	■
CT KUB	■	■	■	■	■	■	■	■
US	■	■	■	■	■	■	■	■
Other	■	■*	■**	■	■	■†	■††	■

	QU	UO	MU	UdeM	UdeS	UL	Dal	MUN
NECT head	■	■	■	■	■	■	■	■
CT KUB	■	■	■	■	■	■	■	■
US	■	■	■	■	■	■	■	■
Other	■	■	■	■	■	■	■	■

* CTA/GTP for stroke at UAH. ** Select stroke and trauma CT requests.
 † CT for stroke and TIA workups. †† CT C-spine. CT abdomen/pelvis for basic indications (e.g. appendicitis).

Results: Tech Supports

15/16 (94%) have 24 hr in-house CT tech coverage in all centres for adult cases.

- UL: IUCPQ and HDQ CT techs called in after 0000h.

Of the programs responsible for MRI, only UWO and UHN (at UofT) have 24hr coverage.

Table 10 US tech support for on-call resident at each DR residency program.

■: in-house tech support for entire shift
 ■: tech called in after hours
 ■: some requirement for resident to scan

UBC	UofA	UofC	UofS	UM	UWO	Mac	UofT
■	■	■	■	■	■	■	■
QU	UO	MU	UdeM	UdeS	UL	Dal	MUN
■	■	■	■	■	■	■	■

■: no resident responsibility for US on call

Results: Attending Supports

Varying degrees of attending support available to residents during call:

1. Full overnight direct attending support at every site and call shift type (“*direct support*” meaning the attending will report cases from the resident call worklist and/or review and sign off resident cases during the resident call shift).
2. Same as “1” but only for some sites and shift types.
3. There are no resident call shifts with in-house/awake overnight attending coverage. However, all shifts will have a period of direct attending support prior to the attending leaving for the night.
4. There is at least one resident call shift type where there is no direct attending support. The attending can be reached if needed but typically will not report cases or interact with on-call resident outside of check in/readout (if applicable).
5. Same as “4” except for all sites and shift types.

Table 11 Overall degree of direct attending support for on-call resident at each DR residency program.

■ : 1 ■ : 2 ■ : 3 ■ : 4 ■ : 5

UBC	UofA	UofC	UofS	UM	UWO	Mac	UofT
■	■	■	■	■	■	■	■
QU	UO	MU	UdeM	UdeS	UL	Dal	MUN
■	■	■	■	■	■	■	*

* Resident call at MUN is by default home call.

Table 12 Description of overnight attending coverage during resident call.

UBC	VGH: Emergency radiology department is 24 hr service. Attending is physically present in same room as on-call resident.
UofA	“Early overnight” attending from 2300-0400h and “late overnight” attending 0000-0630h who can also support resident for any urgent cases 0630h-0800h.
UofC	In-house body and neuro attending coverage for on-call PGY2.
UofT	St. Mike’s and Sunnybrook: In-house emergency radiology attending coverage 1900-0700h every day.

Results: Call Preparation

Variety of dedicated call prep resources available for new PGY2s:

1. Buddy call system.
2. Dedicated call prep lectures/rounds led by attendings.
3. Dedicated call prep lectures/rounds led by more senior residents.
4. Call guide/textbook/case collection made by program or more senior residents.
5. Call simulator/OSCE: Online or in-person simulation of call prior to official start.
6. Call preparation courses: UOttawa call prep course (most popular). MUN call course.

Note: Only resources made for the primary purpose of call preparation were included (does not include normal rounds, half-days, personal reading and studying, day rotations etc.)

Table 13 Call prep resources available at each DR residency program.

■ : available ■ : unavailable

	UBC	UofA	UofC	UofS	UM	UWO	Mac	UofT
1	■	■	■	■*	■	■	■	■
2	■	■	■	■	■	■	■	■
3	■	■	■	■	■	■	■	■
4	■	■	■	■	■	■	■	■
5	■	■	■	■	■	■	■	■
	QU	UO	MU	UdeM	UdeS	UL	Dal	MUN
1	■	■	■	■	■	■	■	■
2	■	■	■	■	■	■	■	■
3	■	■	■	■	■	■	■	■
4	■	■	■	■	■	■	■	■
5	■	■	■	■	■	■	■	■

* Instead of buddy call, PGY2s only shadow more senior residents during their call from Oct-Dec. No graduated responsibility and PGY2 does not dictate.

15/16 (94%) gradually transition new residents into solo call by pairing them with senior residents and giving them graduated responsibility (“buddy call”).

- Range: 8 weeks (UofA) to 7 months (UdM).

Table 14 Duration of buddy call at each DR residency program.

■: <3 months ■: 3-4 months ■: >4 months

UBC	UofA	UofC	UofS	UM	UWO	Mac	UofT
■	■	■	■	■	■	■	■
QU	UO	MU	UdeM	UdeS	UL	Dal	MUN
■	■	■	■	■	■	■	■

■: no buddy call

Results: Post-call

6/16 (38%) require residents to review overnight cases following a call shift. Overall range: 30 minutes to **3 hours**. On average 1-2 hours.

5/16 (31%) require attendings to formally evaluate a resident’s call performance (beyond what is required for Royal College accreditation).

Table 15 Requirement to stay post-call to review overnight studies with attendings at each DR residency program.

■: no requirement ■: required (≤1 hr typically) ■: required (>1 hr typically)

UBC	UofA	UofC	UofS	UM	UWO	Mac	UofT
■	■	■	■	■	■	■	■
QU	UO	MU	UdeM	UdeS	UL	Dal	MUN
■	■	■	■	■	■	■	■

Table 16 Requirement for formal call performance evaluation (outside of Royal College requirements) at each DR residency program.

■: no requirement ■: required

UBC	UofA	UofC	UofS	UM	UWO	Mac	UofT
■	■	■	■	■	■	■	■*
QU	UO	MU	UdeM	UdeS	UL	Dal	MUN
■	■	■	■	■	■	■	■

* Only required during the “Emergency and Trauma Radiology (ETR)” block.

Discussion

There is a large degree of heterogeneity across the 16 Canadian DR residency programs in regard to call structure.

Notably, **12/16 (75%) of programs have a structure that necessitates sometimes working continuously for ≥ 24 hours.**

- This is an area that should be further explored and correlated to resident burnout.

We hope that through knowledge sharing and increased transparency of call structures nationwide, Canadian DR residency programs are able to utilize pre-existing call formats to tailor their own as the field of radiology and radiology residency training continue to evolve.

Thank you!



Canadian Association of Radiologists
L'Association canadienne des radiologistes

References

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