



SASSS

Centre de recherche  
du CISSS de  
Chaudière-Appalaches

# RETROSPECTIVE REVIEW OF INQUIRIES TO THE QUÉBEC DIVING MEDICINE CALL CENTER: 2004-2018

David PM Monnot<sup>1, 2</sup>, Jocelyn Boisvert<sup>2</sup>, Dominique Buteau<sup>2, 3</sup>, Neal W Pollock<sup>1, 2</sup>

<sup>1</sup> Department of Kinesiology, Université Laval, Québec, QC; <sup>2</sup> CISSS Chaudière-Appalaches (CHAU-Hôtel-Dieu de Lévis), Hyperbaric Medicine Unit, Emergency Department, Lévis, QC; <sup>3</sup> Family Medicine and Emergency Medicine Department, Université Laval, Québec, QC, Canada.



## INTRODUCTION

The Commission de la santé et de la sécurité du travail (CSST) recommended developing a consultation service following a concerning number of diving-related accidents in Québec, Canada to ensure optimal care for victims of diving accidents. The Centre de médecine de plongée du Québec (CMPQ) program was instituted in 2004 with a 24-hour dive emergency call line and bilingual diving medicine information service. Calls and emails are answered by a CMPQ coordinator who consults with and directs inquiries to on-call hyperbaric physicians and other resources as needed. Our goal was to review 15 years of call centre activity.

## METHODS

Records from CMPQ contacts (phone calls and emails) were reviewed individually and compiled into a database.

Contacts were treated as independent and were distributed into five classes relating to the degree of urgency:

- information only (INF).
- medical opinion required (MOP).
- medical issue arising after a critical period of urgency has passed (PUR).
- currently urgent but not immediately life-threatening issue (NLT).
- immediately life-threatening issue (ILT).

Contacts were assessed for:

- temporal patterns (daily, weekly, and seasonal presentation).
- the form of the contact (phone or email).
- point of origin (within or outside Canadian territory).
- status (direct involvement or medical professionals giving care).

Descriptive data are presented as mean±SD with range, or percentage, as appropriate.

## RESULTS

A total of 3232 contacts were captured from May 2004 through December 2018.

- sufficient detail was available to categorize 99.8% of contacts.
- contact volume was 19±8 (2-42) per month, or 215±70 (38-329) per year.

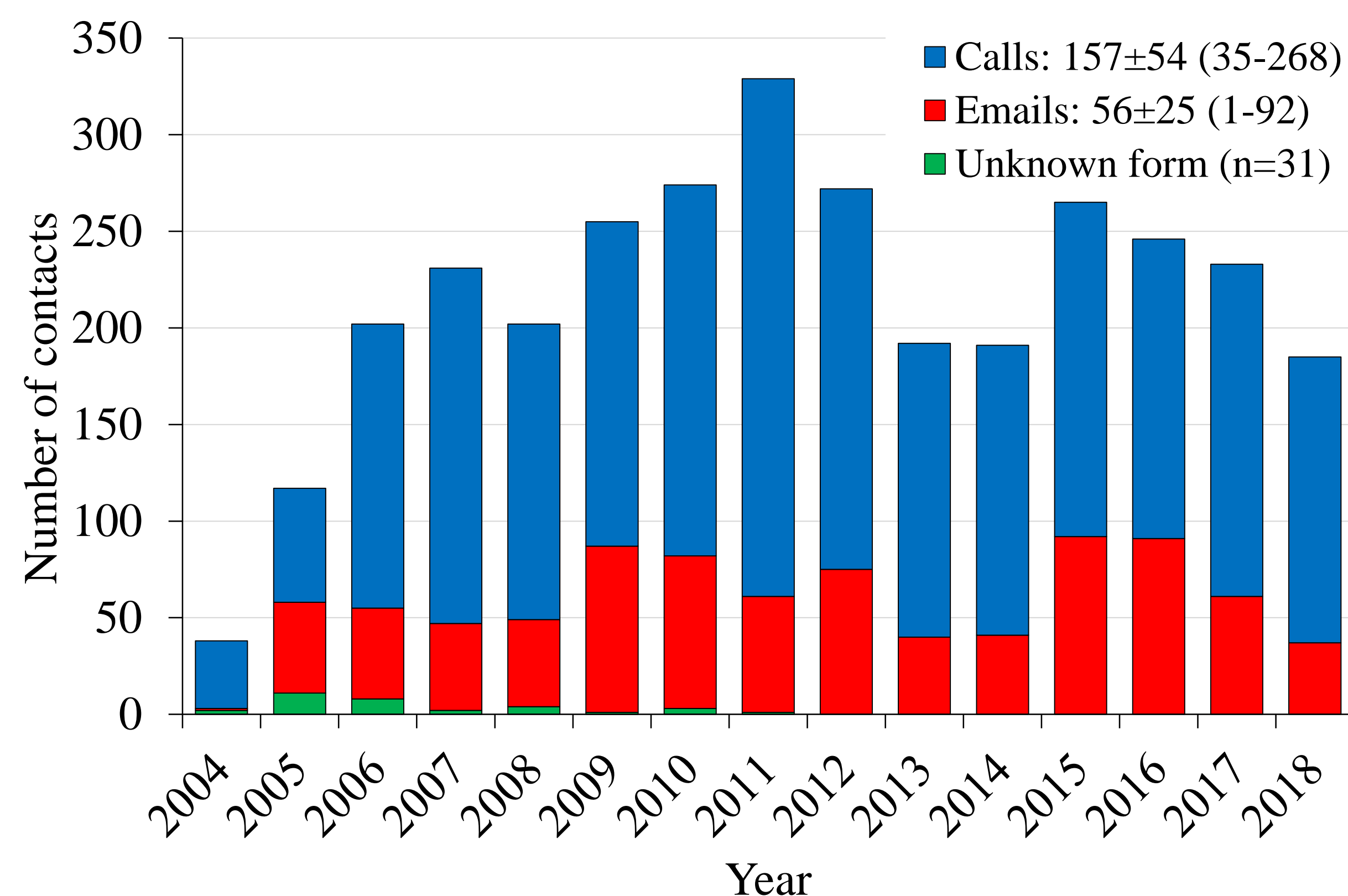


Figure 1. Year distribution of contacts (2004 represents a partial first year of operation).

Seasonal patterns of contacts were evident:

- 22±5 (2-42) per month in the warmer months (May through Oct).
- 15±4 (4-29) per month in the colder months (Nov through Apr).

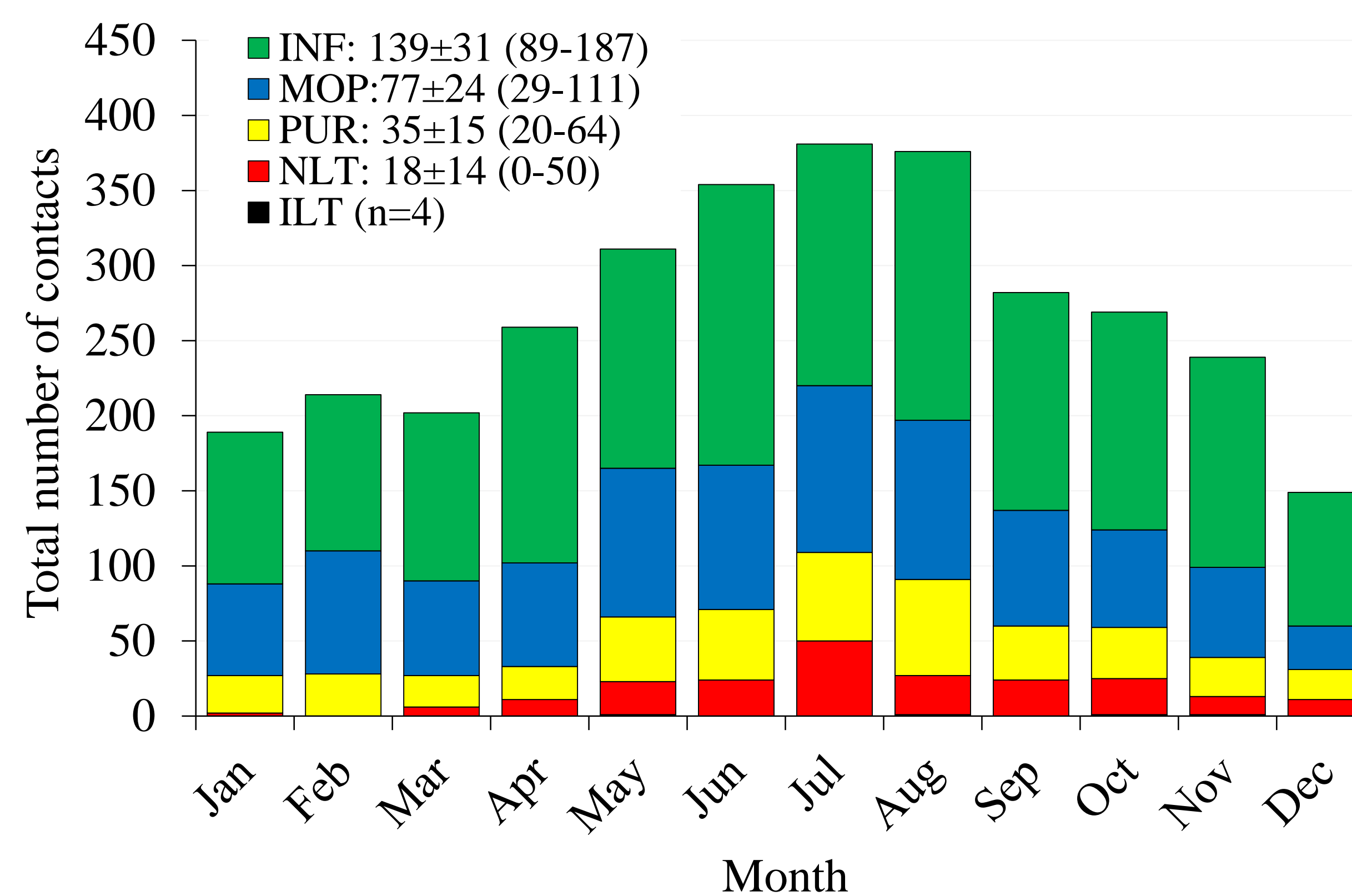


Figure 2. Monthly distribution (n=3232 contacts)

- urgent calls (ILT and NLT) were split with 80% in the warmer months and 20% in the colder months.
- 36% of all urgent calls came in on weekend days.
- 28% of urgent calls were received between 18:00 and 08:00.

Table 1. Classification by form of contact

Contact form	n %		ILT		NLT		PUR		MOP		INF	
	n	%	n	%	n	%	n	%	n	%	n	%
Calls <sup>1</sup>	2353	73	4	0	208	9	405	17	743	32	986	42
Emails	847	26	-	-	-	-	16	2	167	20	664	78
Mail	1	0	-	-	-	-	-	-	-	-	1	100
Unknown form	31	1	-	-	4	13	4	13	8	26	15	48
Total	3232	100	4	0	212	7	425	13	918	28	1666	52

<sup>1</sup>Seven calls did not have enough information in the record to be classified.

The most frequently addressed topics involved, in rank order, ENT, DCS, medications, musculoskeletal, pulmonary, and cardiovascular concerns.

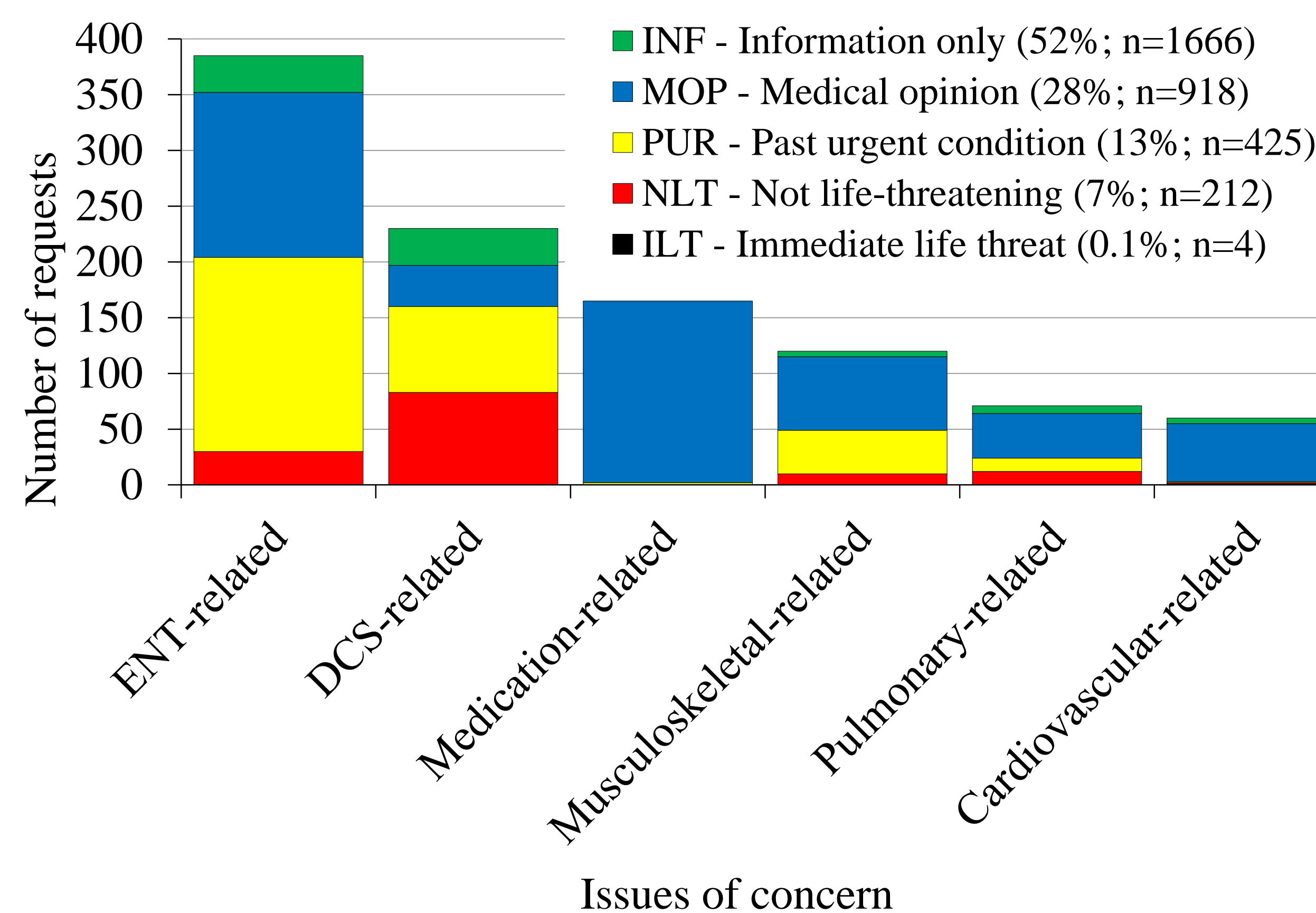


Figure 3. Main health issues distributed by classification (percentages and total case counts for each class in the legend). ENT, ear nose and throat; DCS, decompression sickness.

The frequency of contacts regarding specific issues was fairly stable, with annual fluctuations around 2%.

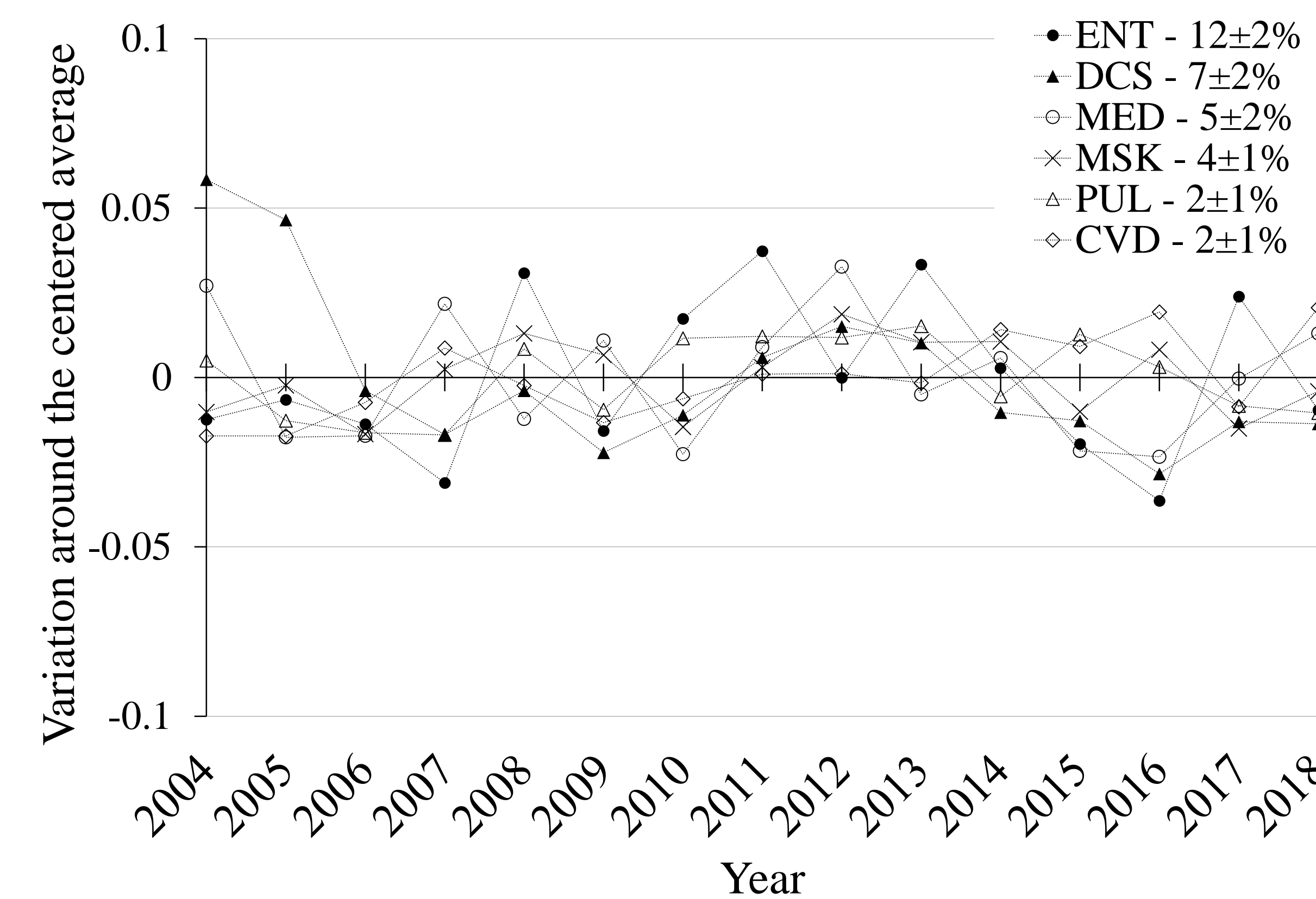


Figure 4. Variation of main health issues of concern over time. ENT, ear nose and throat; DCS, decompression sickness; MED, medications; MSK, musculoskeletal; PUL, pulmonary; CVD, cardiovascular.

The background of divers or divers-in-training making contact was determined in 67% of cases (n=2175).

- 48% were professional divers (n=1039).
- 46% were recreational divers (n=1008).
- 1% were freedivers (n=11).

The origin of contacts was established in 54% of cases (n=1733).

- almost all contacts came from within Canada (98%; n=1702).

Table 2. Origin of contacts by location

Contact form	n	Within Québec (km)			Canada	Internat
		0 to 100	101 to 1000	> 1001		
Calls	1453	490 34	896 62	8 <1	45 3	14 1
Emails	267	51 19	163 61	2 <1	34 13	17 6
Mail	1	- -	1 -	- -	- -	- -
Unknown form	12	1 8	10 83	- -	1 8	- -
Total	1733	542 31	1070 62	10 1	80 5	31 2

## CONCLUSIONS

- This review describes 15 years of activity in telemedicine and emergency diving call centre based in Lévis, Québec, Canada.
- The service is utilized by professional and recreational divers and persons involved in the care of divers.
- The vast majority of contacts involve requests for information.
- A large proportion of contacts are seeking medical opinions or remote medical consultation.
- Greater activity is found during the warmer months.
- The call centre has provided a resource to the community, primarily providing information on health and safety for diving in addition to being available to assist with emergent needs.
- The insights gained here could help to organize, refine, and/or expand capabilities and enhance the training of divers and those responsible for the health and safety of divers.
- The service has the potential to expand across Canada as a national resource.