

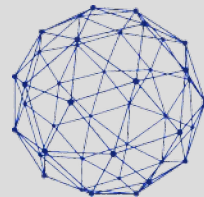
The Impact of COVID-19 on the Incidence of Septicemia Referrals to the Department of Dental Oncology at Northeast Cancer Centre, Health Sciences North

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Disclosure of Affiliations, Financial Support, and Mitigating Bias



Jacob Bennett (CRC)

X	No, nothing to disclose.
	Yes, please specify.

Deborah Saunders (PI)

	No, nothing to disclose.
X	Yes, please specify.

Company Name	Honoraria /Expenses	Consulting/ Advisory Board	Funded Research	Royalties/ Patent	Stock Options	Ownership/ Equity Position	Employee	Other (please specify)
Amgen	X		X					
Dermtreat	X	X						
Galera		X						

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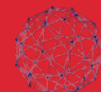
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Introduction



The Department of Dental Oncology receives internal/inpatient referrals from various departments at HSN. The dental clinic located on floor 0 of the Northeast Cancer Centre (NECC) offers access to dental assessments for patients admitted due to oral disease or identified oral disease at time of admission.

Between January of 2015 and September of 2021, the dental clinic at the NECC received 349 internal referrals with over 51% (n=181) being referred for miscellaneous oral concerns.



Figure 1.

Entrance to the Northeast Cancer Centre at Health Sciences North. Located in Sudbury ON.

Introduction

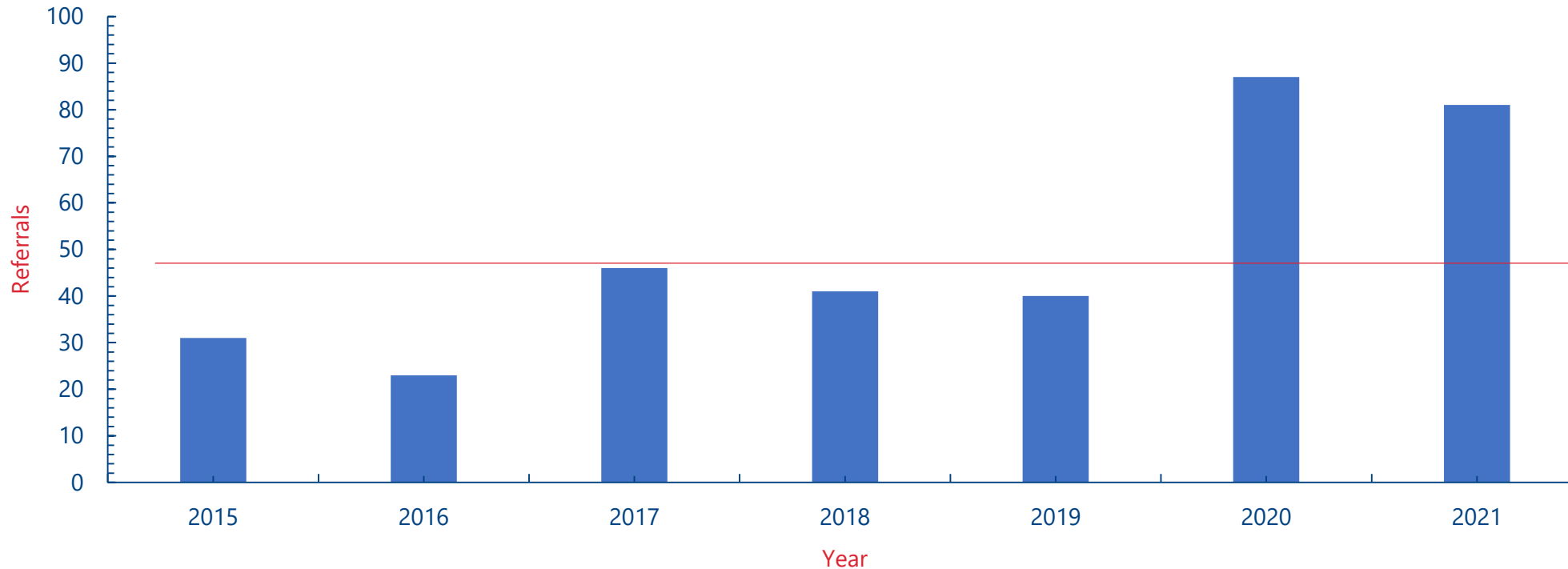


Figure 2.

Annual internal referrals to the dental clinic at NECC 2015 – September 30, 2021 (n=349). Red horizontal line depicts annual average of 49.9 referrals/year.



Introduction

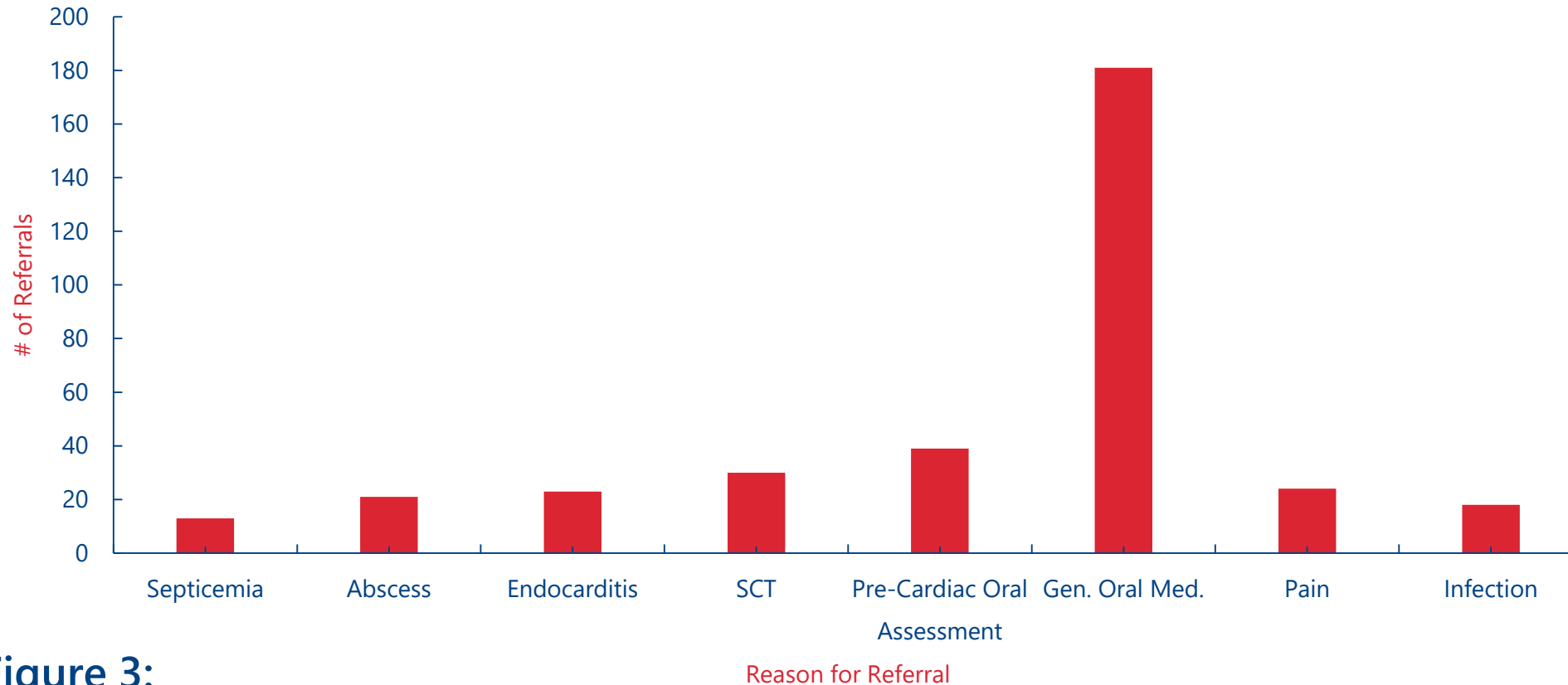


Figure 3:

Breakdown of internal referrals to the dental clinic at NECC from January 2015 – September 2021 (n=349).

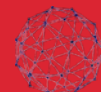
Introduction



Septicemia is the clinical name for blood poisoning by bacteria and it is the leading cause of morbidity and mortality among hospitalized patients¹. Septicemia has an immune suppressing effect which can cause secondary infections contributing to mortality among hospitalized patients¹. Sepsis that progresses to septic shock has a death rate as high as 50%.

Given the effect that COVID-19 prevention measures have had on health-care utilization, we hypothesized that referrals for severe illnesses such as septicemia would increase, and risk factors would be more prevalent among septicemia referrals in contrast to non-septicemia referrals.

¹van Vught LA, Klein Klouwenberg PMC, Spitoni C, et al. Incidence, Risk Factors, and Attributable Mortality of Secondary Infections in the Intensive Care Unit After Admission for Sepsis. *JAMA*. 2016;315(14):1469–1479. doi:10.1001/jama.2016.2691



Purpose



The purpose of this study was to investigate the impact of COVID-19 on the incidence of total and septicemia referrals to the department of dental oncology. Additionally, we sought to investigate if certain risk factors were associated with septicemia referred patients such as smoking, cardiovascular health, mental health, access to insurance and access to a family dentist

In addition to study goals, the collection and analysis of data pertaining to internally referred patients provides the department of dental oncology with valuable information to better understand patient needs and risk factors when visiting the dental clinic. Overall, the collection of this data allows the clinic to provide better treatment, access to care and ultimately better patient outcomes.

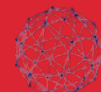


Methods



Design and Setting

- Chart Review
- Retrospective cohort study.
 - Records identified were taken from the HSN MOSAIQ, Meditech and ABELdent software records.
- Patients >18 years of age who were internally referred to the department of dental oncology.
- Electronic medical records were used to retrieve the following data:
 - Date of birth, gender
 - Date and reason for referral
 - # of visits
 - Dental diagnosis, treatment rendered and OR usage
 - Smoking, cardiovascular and mental health history
 - Insurance type and access to a family dentist



Methods

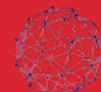


Design and Setting

Patient medical records were used to gather necessary study data. Smoking, cardiovascular, and mental health histories were retrieved to assess patient health history. Insurance type and access to a family dentist were collected to investigate economic risk factors among patients. The date of referral to the dental clinic was also noted in order to track the influx of internal referrals over the course of the pandemic.

Study Population

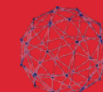
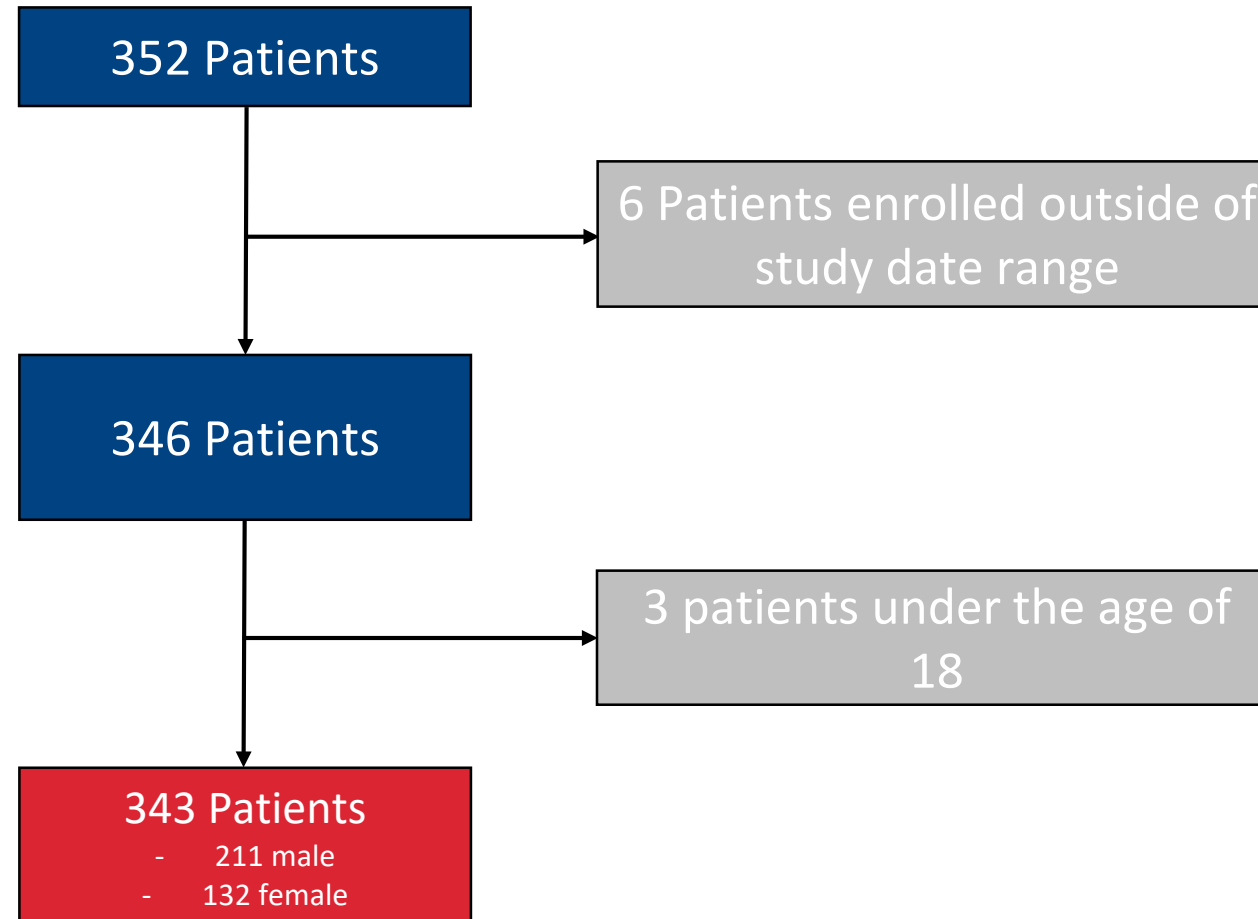
- Date Range of Chart Review:
 - February 18, 2015, to September 30, 2021.



Results



Figure 4.
Quorum diagram
illustrating patient
eligibility and enrollment
into study (January 1,
2015 – September 30)



Results

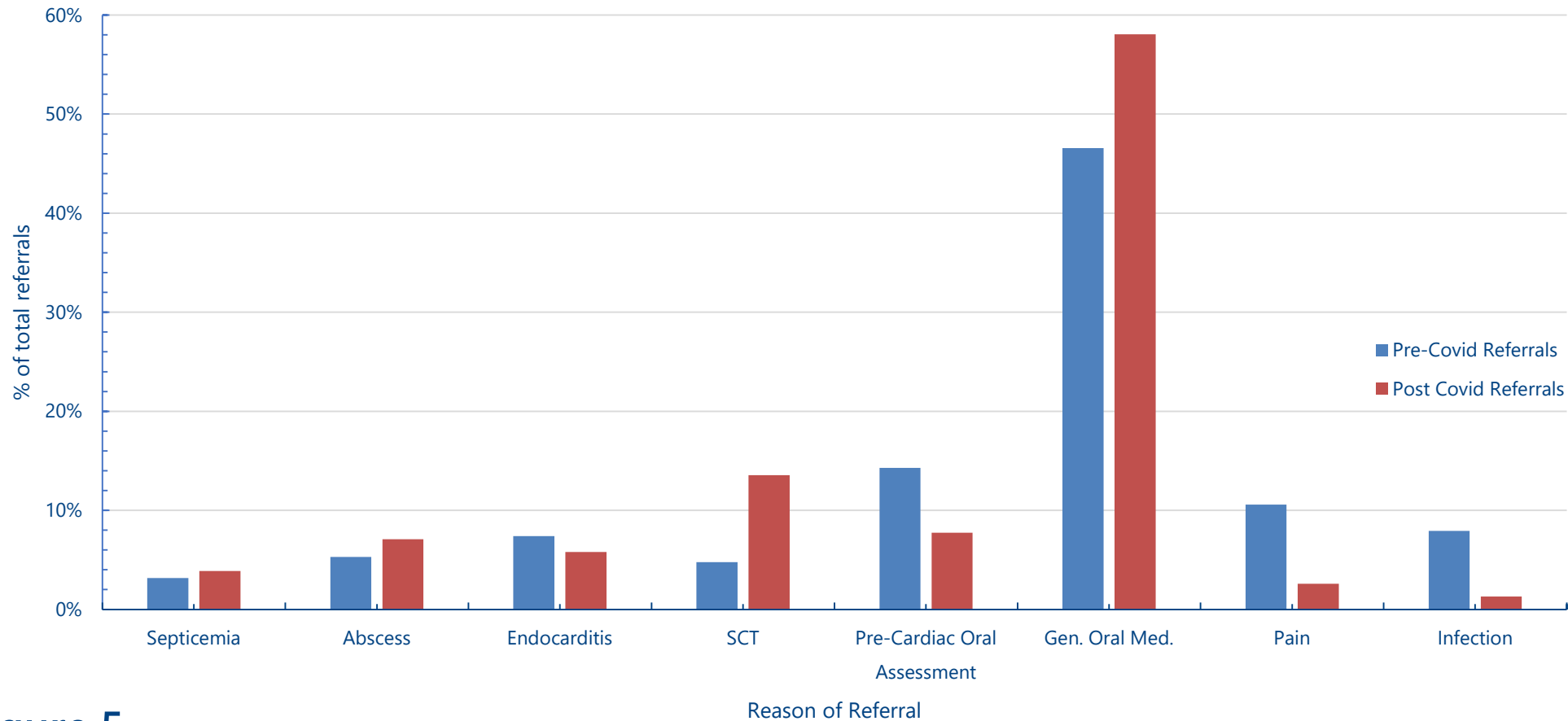


Figure 5.
Breakdown of reason for referrals pre and post COVID-19 Onset. n=189 pre-COVID, n=154 post-COVID.



Results



	Pre-COVID-19 Onset	Post-COVID-19 Onset
Timeline (months)	62	19
Timeline (years)	5.2	1.6
Referrals	189	154
Referrals/month	3	8.1
Referrals/year	36.6	97.3
Septicemia Referrals	6	6
Septicemia Referrals/month	0.1	0.3
Septicemia Referrals/year	1.2	3.8

% Increase Overall Referrals: 165.9%

% Increase septicemia referrals: 226.3%

Table 1.

Referral data for overall and septicemia internal referrals pre and post COVID-19 onset (January 1, 2015 – September 30, 2021).



Results

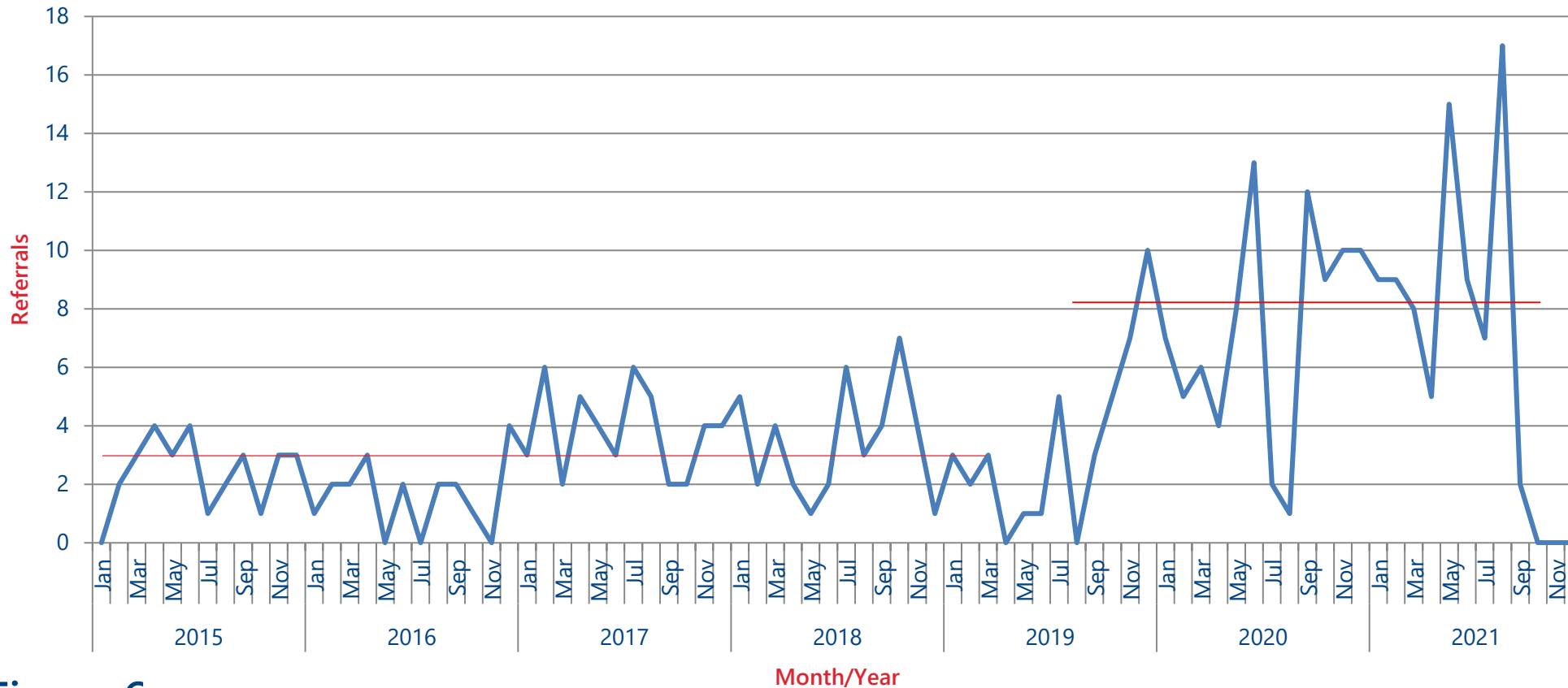


Figure 6.

Monthly Internal Referrals to the Dental Oncology Clinic from January 2015 to September 2021 (n=343). Red lines depict average monthly referrals pre-COVID-19 (3.0) and post COVID-19 (8.1) onset.

Results



	Non-Septicemia Referrals		Septicemia Referrals	
	Count	%	Count	%
N-Value	331		12	
Male	207	62.5%	4	33.3%
Female	124	37.5%	8	66.7%
Mean Age	58		57	
Mean # Visits	2.5		3.3	
Access to Family Dentist	149	45.0%	7	58.3%
Access to Dental Insurance	104	31.4%	4	33.3%
Required Operating Room	62	18.7%	4	33.3%
Smoking History	239	72.2%	9	75.0%
Mental Health Illness	140	42.3%	3	25.0%
Cardiovascular Illness	186	56.2%	7	58.3%

Table 2.

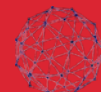
Demographic, health and visit comparison between septicemia referred patients and non-septicemia referred patients.



Conclusions



1. The incidence of COVID-19 generated an increase in internal referrals to the HSN dental department. As a result of this, the frequency of septicemia referrals to the clinic increased drastically following COVID-19 onset.
2. Contrary to popular belief, the possession of dental insurance and care were not contributing factors to the referral incidence of septicemia patients, although a previous smoking history was a common precursor for septicemia referrals.
3. On average, Septicemia referrals visited the dental clinic and operating room more frequently than non-septicemia referrals.
4. Mental health and cardiovascular illness were non-contributory to the incidence of septicemia referrals. In fact, non-septicemia referrals showed higher rates of mental health illnesses.



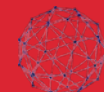
Final Thoughts and Future Directions



Although an increased frequency of septicemia referrals was noted post-COVID-19 onset, this was to be expected as the incidence of total referrals increased in a similar proportion.

With a septicemia patient cohort of 12 patients, it is difficult to establish meaningful demographic/health related differences between septicemia and non-septicemia referrals. Further data collection and analysis is a good next step to provide more meaningful conclusions to comparative data.

This preliminary study suggests that the development of severe, life-threatening diseases such as septicemia may not be an access to care issue, but rather a health literacy issue since insurance and family dental access were non-contributory in the incidence of septicemia referrals.



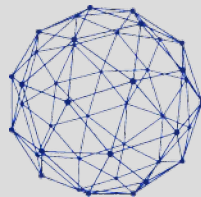
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