

# Clinical Practice Guidelines for the Management of Fatigue in Pediatric Cancer and Stem Cell Transplant Recipients

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Healthier Children. A Better World.

**SickKids**  
THE HOSPITAL FOR  
SICK CHILDREN

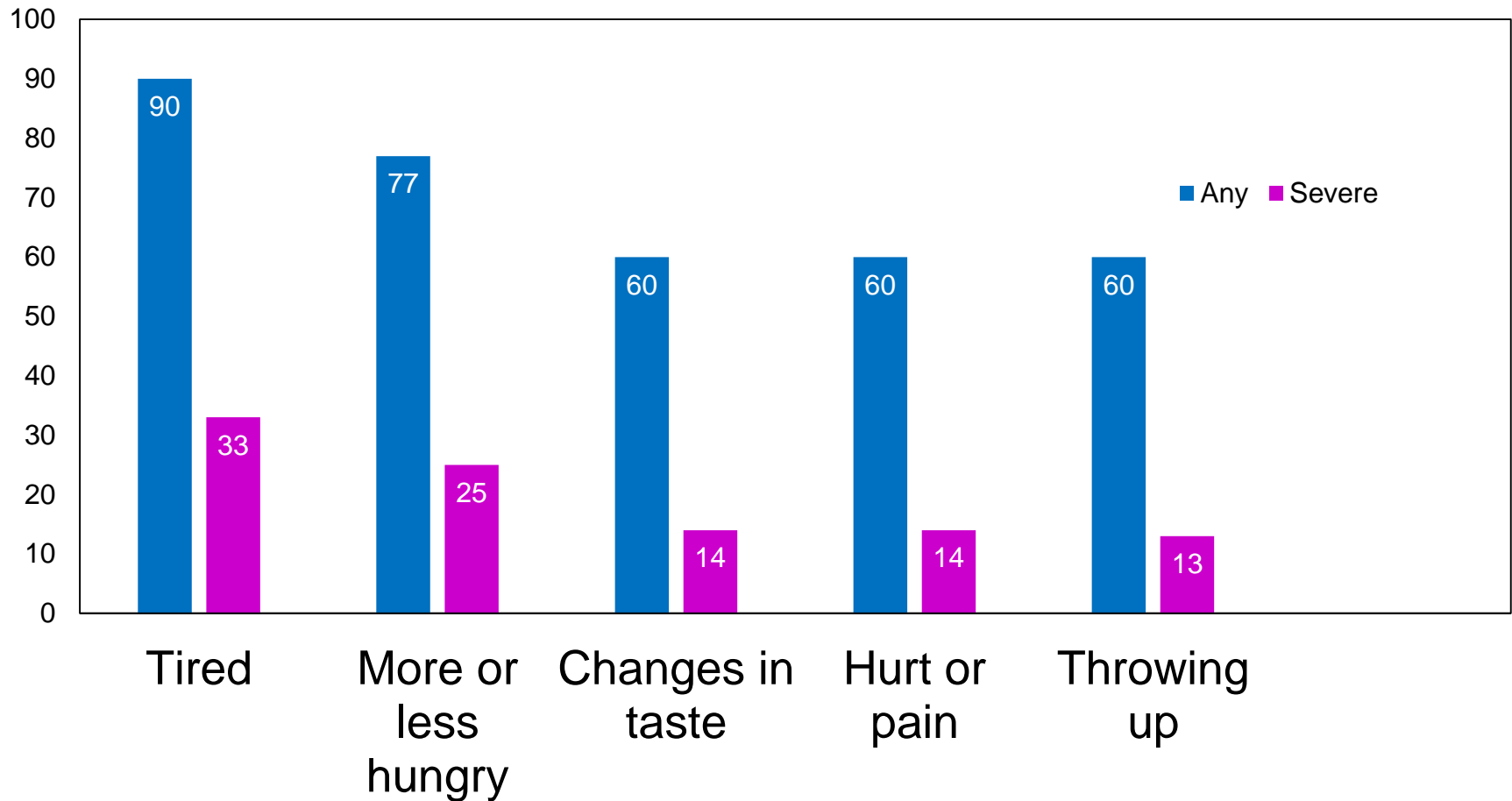
# Fatigue

- Important and highly prevalent problem in adult cancer patients
- Reduces quality of life
- Growing recognition of importance in pediatric cancer and hematopoietic stem cell transplant (HSCT) recipients

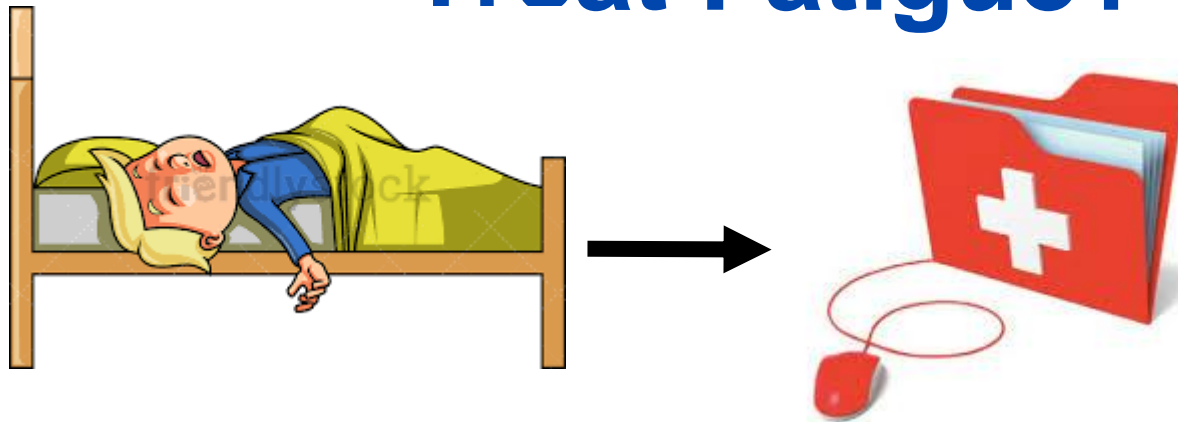


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# Most Common Bothersome and Severely Bothersome Symptoms



# How Often do We Document and Treat Fatigue?



? Documented  
? Intervention

- 64 children self-reported “a lot” or “extremely” bothersome fatigue
  - Any documentation – 14 (22%)
  - Any intervention – 1 (2%)

# Management of fatigue in children and adolescents with cancer and in paediatric recipients of haemopoietic stem-cell transplants: a clinical practice guideline

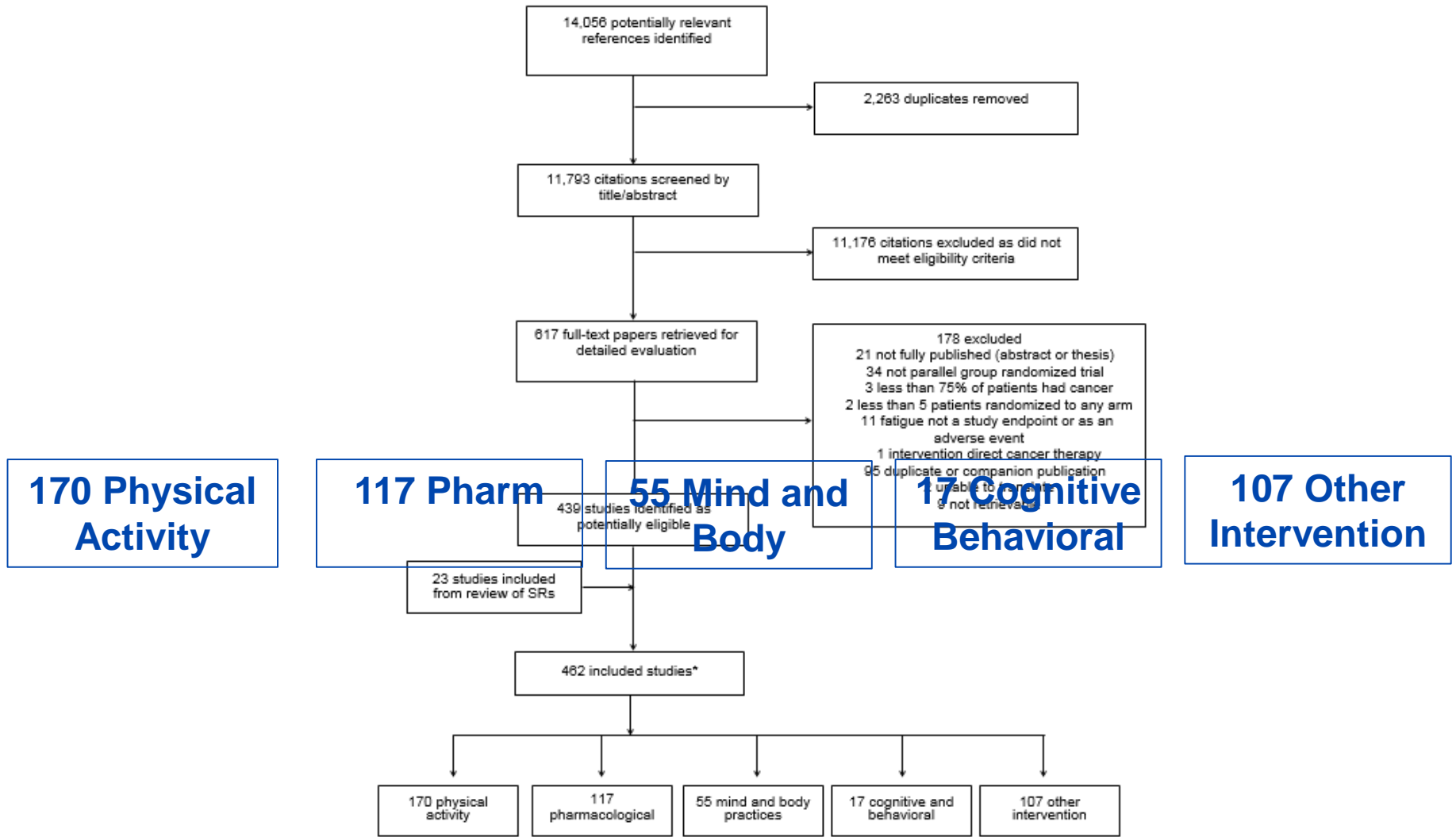
*Paula D Robinson, Sapna Oberoi, Deborah Tomlinson, Nathan Duong, Hailey Davis, Danielle Cataudella, Nicole Culos-Reed, Faith Gibson, Miriam Götte, Pamela Hinds, Sanne L Nijhof, Patrick van der Torre, Sandra Cabral, L Lee Dupuis, Lillian Sung*

Robinson Lancet Child Adol Health 2018



# Approach

- Multi-disciplinary and multi-national panel
  - Two patient representatives
  - Guideline methodologist
- Randomized trials of interventions for fatigue in children and adults with cancer and HSCT patients
  - All languages included
  - Considered directness to children



\*Four studies are included in two categories

# Interventions

<b>Physical Activity</b>	<b>Systemic Pharmacological Agents</b>	<b>Non-Physical Activity Mind and Body Practices</b>	<b>Cognitive and Behavioral Therapies</b>
Aerobic	Methylphenydate	Acupuncture	
Neuro-motor (yoga, tai chi)	Modafinil	Acupressure	
Resistance		Mindfulness	
Combination		Relaxation	



# Characteristics of Studies

Characteristic	Physical Activity N=170	Pharm N = 117	Mind and Body N=55	Cognitive Behavioral N=17
Study Population				
Adults	99%	100%	95%	100%
Children	<1%	0%	5%	0%
Included HSCT Recipients	8%	2%	7%	0%
Timing of Intervention				
During cancer treatment	55%	68%	58%	53%
Following end of treatment	23%	13%	15%	35%
Both during and following	21%	15%	20%	12%
Fatigue at Enrollment	9%	24%	40%	18%
Control Group Type				
Usual care or wait list	62%	22%	67%	65%
Placebo or sham	0%	64%	20%	0%
Attention control	15%	0%	4%	24%

# Physical Activity

Outcome	No. of Studies	No. of Patients	SMD	95% CI	P Value
All Physical Activity Interventions	134	8927	-0.49	-0.60, -0.37	<0.00001
Aerobic	59	3624	-0.36	-0.52, -0.21	<0.00001
Neuromotor	24	1601	-0.56	-0.97, -0.14	0.008
Resistance	13	761	-0.21	-0.35, -0.07	0.004
Combination exercises	35	2803	-0.61	-0.80, -0.42	<0.00001

Recommendations	Strength of Recommendation and Level of Evidence
<p><b>Use physical activity interventions to manage fatigue in children and adolescents with cancer or pediatric HSCT recipients</b></p> <p>Remarks: Strong recommendation based on consistent benefit across patient and intervention characteristics in adults, universal availability, very low risk of harm, low costs, and probable other associated health benefits.</p>	<p>Strong recommendation Moderate quality evidence</p>

# Pharmacological Approaches

Outcome	No. of Studies	No. of Patients	SMD	95% CI	P Value
All Pharmacological Interventions	ND				
Methylphenidate	6	305	-0.32	-0.80, 0.17	0.20
Modafinil	5	905	-0.04	-0.17, 0.09	0.51

<b>Recommendations</b>	<b>Strength of Recommendation and Level of Evidence</b>
<b>Do not routinely use pharmacological approaches to manage fatigue in children and adolescents with cancer or pediatric HSCT recipients</b>	Strong recommendation Moderate quality evidence

# Mind and Body Practices

Outcome	No. of Studies	No. of Patients	SMD	95% CI	P Value
All Mind and Body Practices	37	2808	-0.51	-0.73, -0.29	<0.00001
Acupuncture, acupressure	7	462	-0.40	-0.86, 0.05	0.08
Acupuncture	3	119	-0.13	-0.65, 0.39	0.63
Acupressure	4	343	-0.60	-1.28, 0.09	0.09
Mindfulness	7	807	-0.50	-0.85, -0.15	0.005
Relaxation techniques	8	682	-0.94	-1.61, -0.27	0.006
Energy therapy	5	189	0.08	-0.64, 0.80	0.83
Energizing yogic breathing	3	201	-0.48	-1.06, 0.10	0.10

Recommendations	Strength of Recommendation and Level of Evidence
<p><b>Use relaxation or mindfulness, or both, for children and adolescents with cancer or pediatric HSCT recipients who can participate in these approaches to manage fatigue</b></p> <p>Remarks: Strong recommendation based on consistent benefit across patient and intervention characteristics in adults, very low risk of harm, low costs, and potential for self-administration after training.</p>	<p>Strong recommendation Moderate quality evidence</p>

# Summary of Recommendations

## Fatigue in Pediatric Cancer/HSCT

- Strong recommendations to use:
  - Physical activity
  - Relaxation, mindfulness or both
- Strong recommendation against using:
  - Pharmacological approaches



# Knowledge Gaps

Age-specific approaches to safe implementation of physical activity in children and adolescents with cancer or pediatric HSCT recipients

Inclusion of children and adolescents in pharmacological trials designed to reduce fatigue

Optimal approaches to implement relaxation, mindfulness or both in children and adolescents with cancer or pediatric HSCT recipients

Determine if symptom screening and feedback can improve fatigue

# Randomized Controlled Trials (RCTs) for Fatigue

1. Individualized yoga: children 8-18 years of age with relapsed ALL, AML, group B or C Burkitt's lymphoma or HSCT
2. Supportive care Prioritization, Assessment and Recommendations for Kids (SPARK): children 8-18 years seen in hospital daily for 5 days

# RCT of Yoga for Fatigue

## Yoga Intervention Group

Yoga offered daily excluding weekends/holidays for 21 days

One-on-one sessions

Each yoga session up to 45 minutes



## iPad Activity Control Group

Visits by same yoga instructors - same schedule as yoga – offer games on iPad

One-on-one sessions

Each interaction up to 45 minutes

iPad  
with Retina display



# Symptom Screening and Guidelines



SPARK links the detection of symptoms related to cancer treatment with the best supportive care for kids.

Login 



I am a patient

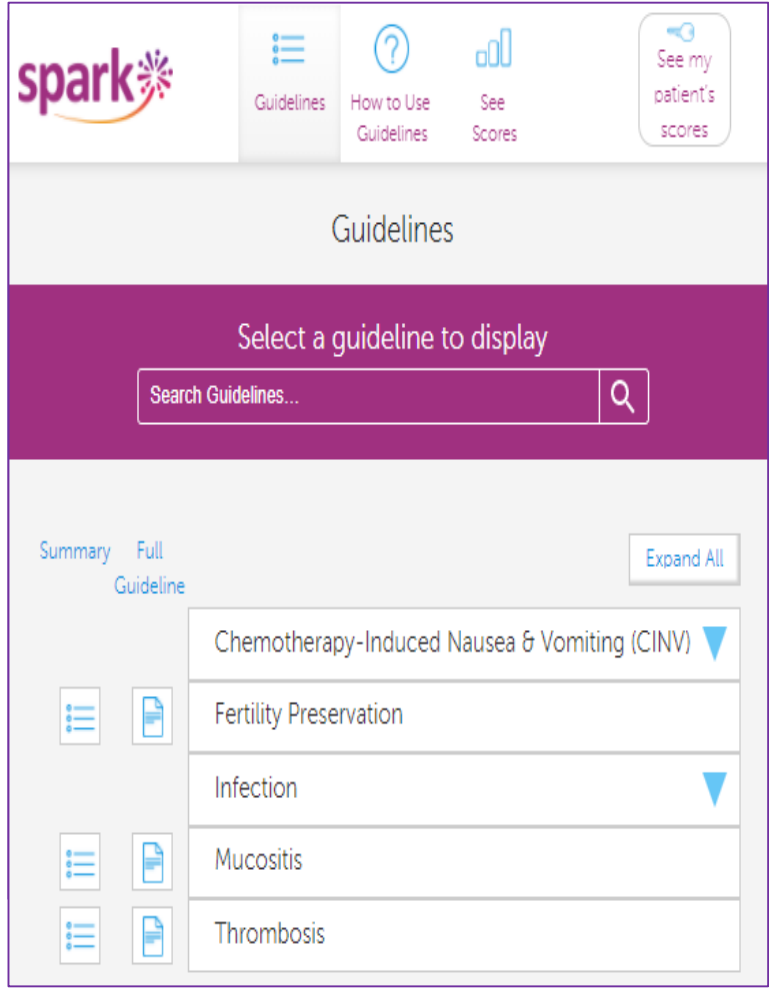



I am a family member







I am a healthcare provider

**SPARK has two parts**  
SSPedi (track symptoms) and clinical practice guidelines (treat symptoms)













spark 

Guidelines  How to Use Guidelines  See Scores  See my patient's scores 

## Guidelines

Select a guideline to display

Summary Full   
Guideline

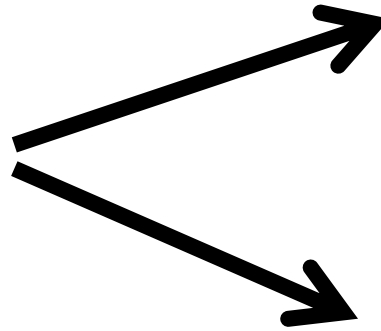
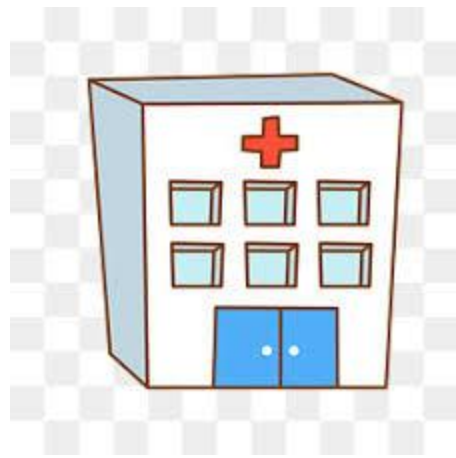
-   Chemotherapy-Induced Nausea & Vomiting (CINV) ▼
-   Fertility Preservation
-   Infection ▼
-   Mucositis
-   Thrombosis



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# SPARK Hospitalized RCT



Daily symptom  
screening  
Reports to team  
Email alerts

Usual care

In hospital or clinic  
daily for 5 days

# Conclusions

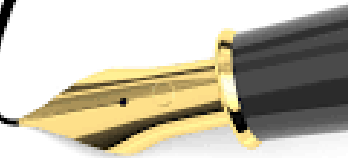
- Fatigue prevalent and severely bothersome in children receiving cancer treatments
- CPG – strong recommendations for fatigue management but so far, uptake poor
- Potential interventions:
  - Individualized yoga
  - Routine symptom screening and access to guidelines



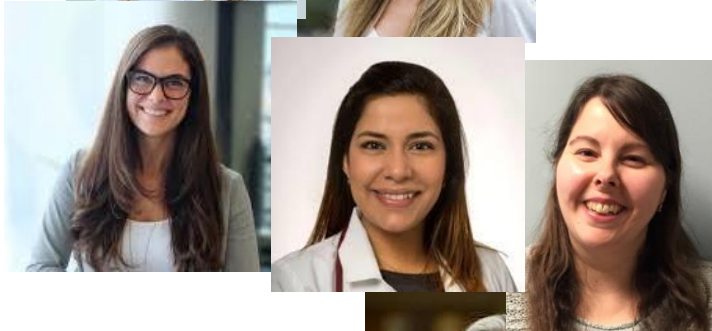
Thank  
you



Canadian Cancer Society    Société canadienne du cancer



**POGO Symposium Committee**



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