"When Cells Misbehave"
Cancer Education in Primary Schools

EVALUATION REPORT April 2018

Staff feedback about the show

- Age-appropriate: 100%
- Inclusive: 100%
- Fully engaged the children: 100%
- Presented well: 100%
- Right amount of content: 100%
- Props helpful: 100%
- Right level of interaction: 100%

Staff feedback about the event

- Increased their learning: 100%
- Would recommend: 100%
- Had anxieties about event: 0%
- Feel more confident: 100%
- Will use info learnt: 100%
- Be more supportive of children: 0%

COMMENTS:

Teachers commented on how unaware they were about the number of children who were affected by cancer in their family.

Children took their learning from the show and applied it to the activity stations. For example during Surgery, they knew the tumour had to be removed otherwise there was risk of the cancer spreading.

The activities stimulated lots of discussions around illness, health, hospital visits and family members being sick.

Mini peer support groups were created during activity station participation. Children who had/or were affected by cancer told their stories and their friends responded with support, understanding and kindness.

Children aged 8-11 do not have any fear around talking or learning about cancer.

Children affected by cancer in their families felt empowered as they were able to answer their classmates questions.
4. Exploration of themes collected from data

The broad original aim of our evaluation was to measure improved understanding of cancer in children, however the data we collected provided a bigger picture regarding children's perceptions about cancer. We gave participating classes posters with different statements the children had to respond to before and after the event. This data highlighted several interesting themes.

THEMES:

a) CHILDREN'S MISCONCEPTIONS ABOUT CANCER
b) CHILDREN'S FEARS AROUND CANCER
c) CHILDREN'S UNDERSTANDING OF CANCER
"When Cells Misbehave"
Cancer Education in Primary Schools

EVALUATION REPORT April 2018

a) CHILDREN’S MISCONCEPTION ABOUT CANCER

Content analysis from children responses to the statement ‘I Think Cancer is Caused by…’ before the show and workshop.

I Think Cancer is Caused by...

(%)  

- Cells 17.53  
- Diet 18.36  
- Drugs 9.86  
- Infectious 3.01  
- Genes 3.56  
- Alcohol 13.42  
- Germs 6.03  
- Stress 1.37  
- Sun/sunbeds 4.93  
- Other diseases 1.64

The Word Cloud below demonstrates the wide range of things children believe cause cancer. Their main sources of information are their parents and the media. For example, the news reported burnt toast and black foods causing cancer so the children’s comments reflected this.

Children understand the causation of cancer from smoking. Alcohol, diet and sunburn were also fairly well known causes of cancer.

The thought that drugs cause cancer was common. We are unsure whether this is illegal drugs or medicines.

Some children understood that cancer has something to do with cells. Most children wrote things like, ‘Too many white blood cells’, ‘Something infecting cells’, ‘Naughty cells’.

Germs, bacteria, viruses spreading cancer was common.
"When Cells Misbehave"
Cancer Education in Primary Schools

EVALUATION REPORT April 2018

A LIST OF OUR FAVOURITE THINGS CHILDREN BELIEVE CAUSE CANCER

We asked an illustrator, Emma Swinhoe, to convert the children’s comments into a piece of art.

<table>
<thead>
<tr>
<th>Frozen Fruit</th>
<th>Kissing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutella</td>
<td>Too Much Stress</td>
</tr>
<tr>
<td>Eggs</td>
<td>Armpit Spray</td>
</tr>
<tr>
<td>Sweetener</td>
<td>Toxics from Faeces</td>
</tr>
<tr>
<td>McDonald’s and KFC</td>
<td>Ink</td>
</tr>
<tr>
<td>Expired Food</td>
<td>Drug Dealers</td>
</tr>
<tr>
<td>Germs in Pizza</td>
<td>Rotting Body Parts</td>
</tr>
<tr>
<td>Walkers Crisps and Quavers</td>
<td>Animals Bites</td>
</tr>
<tr>
<td>Eating Avocados</td>
<td>Being Outside When It’s Really Cold</td>
</tr>
<tr>
<td>Fires</td>
<td>People Getting Too Close Together</td>
</tr>
<tr>
<td>War</td>
<td></td>
</tr>
<tr>
<td>Tape Worm’s Poo</td>
<td></td>
</tr>
<tr>
<td>Sitting on a Toilet</td>
<td></td>
</tr>
<tr>
<td>Brain Damage</td>
<td></td>
</tr>
<tr>
<td>Biting a Straw</td>
<td></td>
</tr>
<tr>
<td>Not Washing Your Hands</td>
<td></td>
</tr>
<tr>
<td>Animals Spread Cancer to Humans</td>
<td></td>
</tr>
<tr>
<td>Iphones and Samsungs</td>
<td></td>
</tr>
</tbody>
</table>

It is often got by actors and singers because of all the bright lights.

Tiny robotic micro-bacteria that fly into your mouth and zap your guts and kidneys and everything.
Using illustrations to visualise children's perceptions of cancer:
Illustrations by Emma Swinhoe

EVALUATION REPORT April 2018
b) CHILDREN’S FEARS AROUND CANCER

Content analysis from children responses, before our event, to the statement ‘I Worry about Cancer because…’

What were children worried about?

- %
- Getting cancer themselves: 13.68
- Death/Dying: 47.72
- Dying themselves: 8.51
- Family/friends dying: 14.59
- No Cure: 5.17
- Specific family member: 18.84
- Hair Loss: 2.74

Children are worried about cancer, associating it with death, killing, dying and pain. There is confusion over how people get cancer, which fuels these fears, as well as children experiencing family members who have had cancer and died from it.

Many children are scared about getting cancer.

Most common worry after death was hair loss and the sadness that cancer would bring.

Many comments referred to 'no cure' being available to treat.

Some children have deep concerns about people outside their immediate family and friends, such as vulnerable people having cancer, as well as the extinction of the human species.

Comments about hair loss suggest the image of a person sick with cancer with no hair is strong. They believe hair loss is due to cancer not the treatment.

Despite the worries that children have, they were extremely enthusiastic to communicate them. Children were very open to learn about cancer, to help them understand and alleviate some of the worries they had. For example, a child who had lost a parent to cancer said that they had been unnecessarily worrying that stress caused cancer. She was relieved to know that stress does not cause cancer and that her family (who have been understandably stressed) were not at risk.

In contrast, we found teachers and staff more difficult to communicate with about cancer. Eye contact was difficult, hushed voices were used and waiting to talk to us alone about cancer was common amongst the adults. This behaviour changed after the training and event, adults became a less inhibited to communicate about cancer.
"When Cells Misbehave"
Cancer Education in Primary Schools

EVALUATION REPORT April 2018

Examples of children's worries around cancer

"I am worried about cancer because they are not stopping it."

"I worry about cancer because you'll need tubes down your throat and up your nose and you don't eat by yourself."

"I worry about cancer because many people could die from it. Example: My mum suffered from cancer, lung cancer, unfortunately she didn't live."

"I worry about cancer you have a 50% of living and 50% of passing away."

"I worry that if I get cancer I might pass it on."

"It could kill my guardians and I would have no one to live with."

"Because it is so easy to catch and can kill you."

"It is extremely dangerous and there is only one, extremely difficult to perform cure."

"I worry that it will spread and that the homeless and less fortunate will catch it and die (also the refugees) (and animals and plants)."

"You don't know the first sign of cancer."

"I worry that my mum might get cancer because it is common in her family."

"My great uncle is dying from cancer. He's only got 4 months to live. I'm scared of dying. I'm scared of the pain. I'm scared of losing my family."

"I worry that if I get cancer I might pass it on."

"Because I don't know how it is caused."

"I'm too young to die"
"When Cells Misbehave"
Cancer Education in Primary Schools

EVALUATION REPORT April 2018

C) CHILDREN’S UNDERSTANDING OF CANCER

Content analysis from children responses, before our event, to the statement ‘I Know This about Cancer…’

Children had a wide range of cancer knowledge, including different types, genetics, treatment, survival and death rates, and how it affected families.

Children were beginning to understand that cells were involved.

I Know This About Cancer...

<table>
<thead>
<tr>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer Kills</td>
</tr>
<tr>
<td>Hair Loss</td>
</tr>
<tr>
<td>Survival</td>
</tr>
<tr>
<td>No Cure</td>
</tr>
<tr>
<td>Cancer Types</td>
</tr>
<tr>
<td>Cells</td>
</tr>
<tr>
<td>Smoking Causes Cancer</td>
</tr>
</tbody>
</table>

However, much of the information the children shared was incorrect or partially incorrect.

"I know this about cancer, your cells mess about in your skin."
"Cancer can be caused when there are more white cells than red cells."
"Everyone has cancer cells but something makes them stronger."
"I know that it is to do with the cells in your body."
"Cancer is a disease that affects your organs. You die from it. It creates cancer cells."
Sometimes if we do certain things it kind of comes alive and injects our blood cells.

"I know that corn and toast can cause cancer even to little children so please be careful when you eat."
"I know that if you suck on your skin it will create a blood clot which can cause cancer."
"Cancer can be caused when there are more white cells than red cells."
"The cancer bacteria go and split in your body and your hair comes out."
"When you have cancer your heart goes black and it shrinks."
"I know cancer can be cured by super foods."
"Terminal cancer is caused by sexual intercourse."
"Everyone has cancer in their body."
"When Cells Misbehave"
Cancer Education in Primary Schools

EVALUATION REPORT April 2018

QUESTIONS, QUESTIONS, QUESTIONS:
We provided children with cards so they could write down all their questions. These were given out between the show and workshop. We received over 500 questions.

COMMON QUESTIONS WERE ABOUT:
- Treatment
- Cancer Types
- How do you know you have cancer?
- Common age to get cancer
- Children getting cancer
- Animals
- Death
- Survival
- Genetics
- Cures
- Hair loss
- Smoking
- History
- Nomenclature
- Things causing cancer
- How cancer affects lives
- Cellular processes

EXAMPLES:
- Does the aluminium in deodorant damage your skin cells and give you cancer? If you have a baby and you have cancer what happens to the baby?
- What happens if your genes are really fast and you generate them too quickly?
- Can loombands cause cancer?
- If someone in your family had cancer how can you help them?
- Can diabetes cause cancer?
- Does eating soap and shampoo give you cancer?
- If your cells are affected by cancer can you catch Ebola/other disease?
- Can my sister get cancer because she goes to the sunbeds a lot?
- Is breast cancer caused by cancer cells from the heart?
- Can you get cancer by black toast?
- Can you get cancer from unwashed plants?
- How about if I get it and my family doesn’t see me go to college?
- Is cancer made from using elastic bands on our wrists?
- If you never come out of your house do you get cancer?
- Is it true you can catch cancer from animals that have disease?
- Do all drug addicts get cancer?
- Can you be immune to different types of cancer?
- Does cancer evolve faster than a human evolves?
- Can cancer cause you to go brain dead?
- Can getting very angry a lot give you cancer?
- Why is cancer able to be caught without it being the person’s fault?
- Can cancer give you mental health issues?
- Can our body fight cancer, and if so is it easy?
- Are you more likely to get it if you are a boy or a girl?
- Is there any part of the body that never develops cancer?
- What happened when a damaged cell touches a healthy cell?
- Can cancer have a solution that can be afforded by poor and rich?
- Is there a stage where it becomes too late to kill all of the cancer cells?
- Does cancer hurt?
- Can cancer go away without medication?
- What country has the most people with cancer and is there a reason why it is that country?
- Can you get cancer from the cold?
- Can electric cigarettes make you have cancer?
- Is leukaemia more deadly than the other cancers?
- That my uncle had cancer and he smoked weed then it was cured – is that true?
- Can I get cancer by what happens in my family tree?
- Could there be a way to wipe it off the face of the earth for good?
- Is there treatment for every type of cancer?
- What is the minimum age limit for cancer?
- How quickly does cancer spread across the body?
- Does chemotherapy stop skin cells as well as hair?
- Can gerbils get cancer?
- When cells get destroyed do they come out of your body?
- What is the first symptom to when you know when you have cancer?
- What colour is a cancer cell?
- How do you get over cancer when a family member died?
Comparative content analysis: Comparing children’s responses to the statement ‘I KNOW THIS ABOUT CANCER...’ before and after the event showed an interesting pattern. We analysed the frequency that ‘death’, ‘dying’, ‘killing’ and ‘cells’ was mentioned by the children.

The shift from ‘death’ themed knowledge to ‘cell’ themed knowledge gives an indication that children simply need to be given correct scientific information. Being cancer educated meant children shifted their understanding from ‘cancer is a death sentence’ to ‘cancer is caused by cells misbehaving’.

Frequency of children's comments about 'death' or 'cells' before and after the event.

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEATH</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>CELLS</td>
<td>0</td>
<td>30</td>
</tr>
</tbody>
</table>

Final Conclusions:

We felt that children enjoyed having a platform to talk about cancer. They responded well to the opportunity to learn about a complex disease, and a disease that many of the children had been affected by. They displayed no fears or inhibitions leading to good open discussions and learning.

Complex scientific subjects that have complex social impact can be dealt with by using creativity and age appropriate, non-frightening language. In fact most adults respond well to this level and type of engagement.

The future: We believe that all children from the age of eight need to be cancer educated. Our project cannot reach every school so perhaps teaching teachers and creating lesson plans with videos, and kits in each classroom may be effective. The predominant barrier to this will be adults not being confident to teach cancer because of their own fears, concerns or lack of cancer knowledge.