

Immunotherapy darts

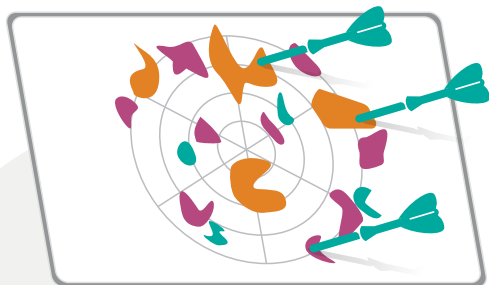
Suitable from approx.
age 6+

This activity can be done with individuals or small groups and requires a facilitator

Aim

To demonstrate how cancer immunotherapy works.

Materials



- Magnetic notice board with a target drawn on using whiteboard pens (for example, [this option from Amazon](#)).
- Magnetic darts (for example, [this set from Amazon](#))
- Different cells of different shapes made of paper stuck on the dart board or cells drawn on the notice board.
- Healthy cells (**pink**) are found frequently and spread out, germs (bacteria, viruses in **orange**) are found more frequently and should be made easier to hit, cancer cells (**green**) are found less frequently, placed closer to healthy cells and should be made harder to hit.
- A leader board/ way of keeping scores can be used to make the game more competitive.

Instructions

- 1 Facilitator: **Would you like to play a game of darts with a twist? Use these darts to try and hit as many cancer cells and germs as you can. They get you the most points. But watch out, if you hit healthy cells, you'll lose points.**
- 2 Participant has a go at using all the darts and adds up total score. Participants gain points for hitting cancer cells and germs but points deducted for hitting healthy cells. Germs (e.g. orange cells on above example) will be easier to hit because they are larger targets and/or found more frequently on the dart board and/or located furthest away from healthy cells. Cancer cells will be close to healthy cells and harder to hit with the darts. Cancer cells are worth **100 points**, germs are worth **80** points, healthy cells are **-20** points.
- 3 Facilitator asks: **Did you find that hard or easy?** Hopefully, participant finds it hard to only hit cancer cells and germs. Facilitator continues: **It's hard just like it's hard for our immune systems to detect cancer cells and target them. Sometimes we can help or boost our immune system. Move closer to the board and try again.**
- 4 Participant repeats playing closer/lower to the board and hopefully increases score.
- 5 Facilitator says: **Well done, hopefully that was easier and shows you how we help the immune system detect cancer.**

Facilitator optional further explanation/discussion:

Immune cells recognise danger through a group of molecules/particles found on the surface of all cells in the body called antigens. This helps them inspect potential problems closely and decide whether to attack. But when a cancer reaches the 'escape phase' it can change. The molecules that would otherwise reveal the cancer to the immune system are lost/changed, and T cells move past, unaware of the danger the cancer cell could cause. Cancer cells also develop ways to inactivate immune cells by producing signals that make them stop working. They also change their local environment, so it becomes a hostile place for immune cells to work. Once the tumours have changed their environment, any circulating T cells that arrive in this space are rendered inactive and struggle to do their job.