

NANO - Role Play

Nanosensors used for Medical Diagnosis

The earlier you can detect cancer the higher the chance of beating this deadly disease. A technique for detecting proteins by encouraging them to stick to and bend a microscopic cantilever (the equivalent of a diving board the size of a hair) is being developed. This technique is sensitive enough to serve as a diagnostic assay for the protein markers characteristic of prostate cancer. These protein markers, called PSA for prostate-specific antigen, are found at higher levels in the blood of men with prostate cancer which is one of the highest killers of men today. The technique developed is so sensitive that it can detect levels 20 times lower than the relevant clinical threshold. This is potentially better than the standard used today to detect protein markers like PSA.

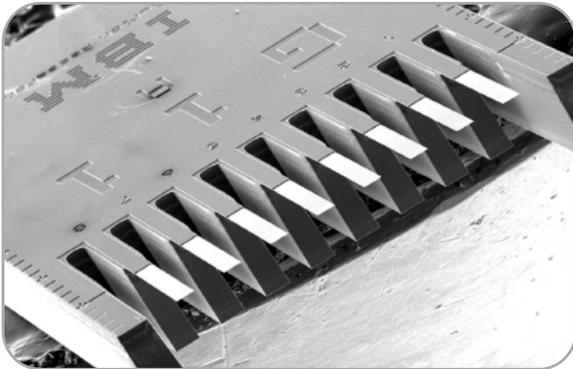


Illustration 1: An electron microscopy image of a cantilever sensor array containing eight individual levers. Image courtesy of Hans-Peter Lang and Christoph Gerber, University of Basel, Switzerland.

Diagnostic nanosensors like the one described will allow for the early detection of various diseases, like cancer, at the very onset of the symptoms, before the disease is perceived by the patient. Early detection means higher chances of successfully treating and overcoming the disease. On the other hand some worry that this will give doctors access to a large amount of personal information. The question is: where is this information going to be stored, and who will have access to it? Also, what if those devices are used not as a diagnostic tool but as a means to assess a person's medical condition by other entities, such as insurance companies or job agencies?

The Dilemma Is:

Should nanosensors be used to diagnose medical conditions in the early stages when there are still no definite restrictions in place to protect patients' privacy?

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Stakeholder: Patient

- Read the text on your card and share your opinion with the group

You represent patients seeking cancer medical care.

Your primary motivations are:

- Make sure that you can get the medical care you need.
- Ensure that you have a say in what kinds of care you receive.
- Look out for examinations that can detect diseases at an early stage.

Consider the following:

- Obviously I want to know as soon as possible if there is any chance that I might have cancer.
- If the use of this technology means extremely early detection I want to have access to it.
- It could mean the difference between life and death for myself or a loved one. There should be no discussion.

• Share your opinion with the group

I think.....

- Note: you may come up with additional ideas, don't feel limited by the information above.

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Stakeholder: Multinational Pharmaceutical Company

- Read the text on your card and share your opinion with the group

You represent a company that has developed the diagnostic nanosensors and is seeking to begin selling them.

Your primary motivations are:

- To provide a medical tool that saves life.
- To generate profit for shareholders.

Consider the following:

- Of course this technology should be used to detect early signs of cancer. This will enable us to develop more cancer-targeting drugs which will result in more lives being saved.
- With profits rising from the sale of more drugs, we can fund more research in the area of treating deadly diseases.

• Share your opinion with the group

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Stakeholder: Insurance Company

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You represent the insurance company. Your job is to pay for medical procedures on behalf of patients.

Your primary motivations are:

- Ensure that covered patients get the medical care they need.
- Keep medical costs as low as possible to maximise profits.

Consider the following:

- If this information is available we should be allowed access to it as soon as possible. This could seriously determine the style and costs of our policies.
- We should be permitted the choice of whether or not to insure someone with all the facts available to us. If they are withheld we will sue the relevant health authorities/doctors or medical practitioners.
- If the use of this tool is to be covered by insurance, the cost of the insurance is likely to be very high. On the other hand, widespread use of the tool may actually lower medical costs.

- **Share your opinion with the group**

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Stakeholder: Human Rights Activist

- Read the text on your card and share your opinion with the group

You represent an organisation that is concerned with protecting civil rights.

Your primary motivations are:

- To protect the fundamental right to personal privacy.
- Ensure equal treatment and opportunities for individuals.

Consider the following:

- Who will have access to personal medical data?
- Could this medical data be used for discrimination by employers or insurance companies?

- **Share your opinion with the group**

I think.....

- Note: you may come up with additional ideas, don't feel limited by the information above.

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Stakeholder: Child (You)

What is your opinion?