Impact Storylines

. IMPACT Program Curriculum

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What are impact storylines?

An Impact Storyline is a logical progression of points conveying most if not all the elements of the research project.

The main objective of writing an impact storyline is to force you to think through the "story" of your research project; a logical progression of points describing your work and why its important.

It should be brief and possible to read within a minute or two, and/or deliver in conversation mode if you're presenting it to someone else.

It is not an "elevator pitch", in that you are not trying to 'sell' your work; you are trying to realistically assess it's purpose, direction, and potential impact. (In the end, you may use it to sell your research, but if you start off that way, you won't be able to clearly examine your work.)



What are impact storylines useful for?

- When considering new work, a storyline can help to focus on the optimal direction and hence research plan.
- When planning a research proposals, the storyline can make sure that the story and flow are clear before writing the entire proposal, and can essentially become the "Specific Aims" page or section.)
- When planning presentations, writing the storyline can help organize the presentation before working on the slides.
- Similarly writing the storyline for a manuscript can be more efficient than writing the entire manuscript and editing (although hopefully a storyline has been written before the stage of manuscripts).



- Like everything, it is sometimes more difficult than it seems to get a concise and coherent string of statements.
- One typical problem with some storylines is that the points each make sense, but do not actually logically follow from each other. It is really important to ensure that the storyline makes sense and does not have jumps from one idea to another.
- When well done, someone should be able to repeat a storyline back to you after hearing it without much difficulty.



Storylines need to be in simple terms

If a storyline is focusing on the main concepts of what the problem is, that the approach is reasonable, and that the solution will have an impact, it should be possible to write it in terms that anyone can understand. Attempting to write it in this form forces that clarity.

Simple is not "dumbed down".

Simple is not "unprofessional".

But it can't be so simple that it doesn't say anything.

Complex concepts in simple terms – forces clarity.



IMPACT Storyline Points

- Assume the audience is a diverse scientific audience who may not know anything about your project or field. (The basic flow that you develop can later be expanded in different parts for a particular audience.)
- Storylines will probably swing back and forth between too general and too specific / detailed as you hone in on the crucial points through iterations.
- What you may have spent a lot of time working on may not be the most important aspect in terms of impact (although it may have been critical to enable the project to be accomplished).



IMPACT Storyline Points

- Also keep in mind that you're not trying to make your project/data look good; you're trying to look at the project to optimize its path to impact
- You want to write about what YOU are doing, not what your lab or the general field is doing.
- A typical problem is that many different offshoots of the main project are thrown in; its better to have a "core" impact storyline which is clear, and then possibly add in other points. But then it will be clear which is the main issue and what the other related issues are, so will be less confusing.



What we mean by: Avoid jargon and generalizations. Be specific, but not detailed.

Examples of phrases:

- I'm studying patients with thrombosis induced MI
 - (too much jargon)
- I'm studying heart disease
 - (too general)
- I'm studying patients who have blood clots which form in the blood vessels supplying the heart, leading to the death of areas of heart tissue.
 - (OK, could probably have some more scientific terms)
- I'm studying patients who have blood clots in the left anterior descending artery, immediately after its bifurcation from the left main artery, leading to death of heart tissue on the anterior aspect of the heart.
 - (not jargon, but too detailed, many of the points not needed)



Recall: Impact Statement example

- What you did
- What will be different because of it
- Why is it important

Therapies which might prevent or reverse the effects of osteoarthritis can now be tested for efficacy in patients at risk of early arthritis due to ACL tears with our MRI technique which images the concentration of the critical glycosaminoglycan molecules in cartilage.



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What is the

Problem ,

Impact Storyline example

- 1. Osteoarthritis is a debilitating disease whose current "cure" is total joint replacement surgery.
- 2. Pharmaceutical therapies have been suggested as means of delaying or preventing the development of arthritis, however it has been difficult to evaluate the effectiveness of these therapies.
- 3. In order to enable evaluation of these therapies in clinical trials, our goal was to develop a method to measure the concentration of macromolecules which are lost early in the disease process. In particular, we wanted to measure the concentration of glycosaminoglycans (GAG).
- 4. We proposed a method based on the fact that GAG have a net negative bound charge, and this charge is balanced by the free ions in the tissue. Therefore the concentration of positively charged free ions will be higher in cartilage with low GAG than in healthy cartilage, and this is the basis for histology stains such as Toluidine Blue⁺
- One of the commonly used MRI contrast agents (molecules that are injected into the body and can be imaged with standard MRI techniques), is Gd-DTPA²⁻, and has a negative charge. We hypothesized that Gd-DTPA²⁻ will distribute in lower concentration in diseased cartilage depleted of GAG. We called this proposed technique delayed Gadolinium Enhanced MRI of Cartilage (dGEMRIC).
- 6. Our goals were to: (1) Validate this technique ex-vivo, (2) Demonstrate the feasibility in vivo, and (3) Monitor GAG in patients in situations which might be early OA.
- 7. We first demonstrated that by imaging excised cartilage samples in Gd-DTPA²⁻ and imaging with MRI, the "GAG map" matched that of standard GAG histology.
- 8. In the second set of experiments, by injecting this contrast agent intravenously and giving it time to penetrate cartilage, imaging the knee, and then obtaining histology of the cartilage after total knee replacement surgery, we validated that we can image the distribution of GAG in cartilage in patients.
- 9. Pilot clinical studies demonstrated that not only is there GAG loss in otherwise apparently "healthy" cartilage in patients with early OA, but GAG loss was reversible.

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Try it!