The Fundamentals of Video Production

SIMON GLAZEBROOK
The Royal Wolverhampton Hospitals NHS Trust, UK

Bob Kiger, writing in *American Cinematographer*, defines videography as "film-type productions using electronic image recording and electronic postproduction techniques"[1]. It is an audiovisual experience whose strength lies in its ability to portray movements and emotions. The increase in the application of videography within the clinical setting has enhanced the documentation of conditions where the physical movement of the patient is key to the diagnostic process, for example, in neurological conditions.

Video can be a powerful educational tool that provides "audiovisual images of exemplary individual cases which can imprint themselves in the learner's memory rather as his own experiences are imprinted"[2].

The production of high-quality clinical video requires the clinical videographer to assume a number of roles including camera operator, lighting technician, editor and project manager. In order to better facilitate the production of clinical videos it is useful to map out the process as a stage-by-stage workflow. Examples of the stages in a basic workflow are discussed in detail in this article.

UNDERSTANDING THE VIDEO PRODUCTION WORKFLOW

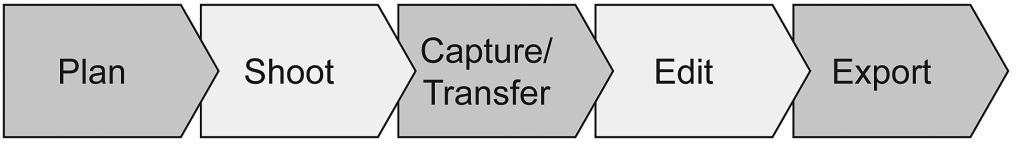

Figure 1 Video Production Workflow

PLAN

Preparation and planning is the key to a successful outcome. Many hours of planning can be invested in the shortest of projects with the aim of producing a smooth sequence of images and sounds that the viewer will enjoy and easily digest.

The first task is to identify the purpose of the video. For a clinical video project this could include the identification of the key signs and symptoms of the condition.

Secondly, the target audience must be identified to guide the delivery of the information; this will affect the style of the production, language and graphics used and the depth of detail discussed.

Once the scope of the project has been established the Treatment can be developed. The Treatment is a scene-by-scene plan of the video identifying the content and method of production of each scene and its position in the final sequence.

Next, the scenes can be individually Storyboarded, providing a shot-by-shot breakdown of each scene. This allows each shot to be reviewed in context, ensuring a logical progression of the content and ultimately that the shots fit together without 'jarring'.

The Script can be written in parallel to the development of the Storyboard. The Dialogue Script provides the spoken words of the performers or the narrator. In contrast, the Shooting Script contains technical instructions for the production, enabling the planning of camera positions, lighting designs etc.

Where patients are featured, the recommendations set out in the Institute of Medical Illustrators (IMI) National Guideline '*Consent to Clinical Photography*' should be applied. The project plan must account for this process and the potential obstacles this may present, namely that a patient may refuse consent.

SHOOTING

Once a good plan has been established, shooting can begin. In this phase of the production process simple steps can be taken to ensure that the footage is of the highest standard.

Correspondence: Simon Glazebrook, Clinical Photographer, Medical Illustration, The Royal Wolverhampton Hospitals NHS Trust, New Cross Hospital, Wolverhampton, WV10 0QP. Email: simon.glazebrook@nhs.net

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Three main areas must be considered; these are discussed briefly below and will be explored in more detail in subsequent articles:

Camera Operation

At a basic level the quality of a video clip can be assessed against three criteria:

Exposure

- A shot should be correctly exposed, with no distracting areas of shadow or burned-out detail. Most modern cameras have a built-in exposure meter and this should be checked before shooting.

Shot Stability

- If the shot is constantly in uneven motion, the viewer will be unable to follow the action. A tripod should be used to ensure the shot is stable and level – especially important when filming for long periods, for example, during operations.

Focus

- The key elements of the shot must be in focus, and this should be checked before shooting.

If any of these elements are not to the required standards, this can distract the viewer from the content of the video.

To ensure a high-quality production, it is better to cut cleanly from one stable shot to another rather than to swing the camera from one field of view to the next. However, as experience grows, more sophisticated camera movements can be incorporated, such as Panning, Tilting, Zooming, Dollying and Crabbing.

Lighting

Lighting should be used to evenly illuminate a scene, eliminating distracting shadows. The same techniques used in clinical photography can be used in video production to highlight clinical conditions. Video lighting does not have to be complicated – a single light and a reflector can suffice.

Audio

Audio is an integral aspect of any video and is equally as important as the visual elements. Poor quality audio can destroy a production – background noises or audio synchronisation issues can distract the viewer from the content of the video. Recording good quality audio requires the correct microphones and literary sources on this matter can advise accordingly.

SINGLE-CAMERA OR MULTI-CAMERA

There are two production methods for shooting video:

- Single-Camera- single shots of multiple actions
- Multi-Camera- multiple shots of single actions

Some of the advantages and disadvantages of both are outlined in Table 1.

CAPTURE/TRANSFER

Before editing can begin the video must be uploaded from the recording source to the editing suite. The method by which this is done depends on the camera used. The two options are outlined below:

Capture - the process of digitising tape into an editable format

Transfer - importing editable files from digital memory devices

EDIT

Editing is the assembly stage of the Production where the footage, audio and graphical elements are combined to produce the completed video.

To increase efficiency and avoid repetition it is useful to agree on a series of gateways for the editing process. A simple sequence that might be used is as follows:

- *Rough Cut* – A quick assembly of selected shots to establish each scene. This will allow the scene to be assessed quickly and any problems to be identified.

Table 1 Advantages and Disadvantages of Single and Multi-Camera Shooting

	Advantages	**Disadvantages**
Single-Camera	● Portable ● Requires only 1 operator ● Quick to set up and breakdown ● Lower production costs ● Less space is required for shooting	● Only captures one part of the action at a time ● There can be continuity issues ● Presents problems for improvised pieces ● Can be time-consuming by having to set up and repeatedly shoot
Multi-Camera	Records multiple angles of the same take Reduces continuity problems Actions and reactions of the same moment can be captured Quicker to produce	Increased costs due to more staff being needed Large and complex locations and set up

- *Refine the Edit* – Once the content has been agreed, the entry and exit points of each clip can be rolled and the edit point of each cut rippled to obtain a smooth transition from shot to shot and the correct pacing for the scene as a whole.
- *Polish* – With each scene finalised graphics and other effects can be incorporated to finalise the production.

While making editing decisions it is important to remember the target audience as identified in the planning stages. Good editing will transform a collection of clips into a professional and engaging video whilst poor editing may alienate some viewers regardless of the quality the content. The viewer experience should be considered first in all decisions and great care should be taken not to fall into the trap of selecting scenes based on personal preference.

Restraint should also be exercised when making editing decisions. Whilst editing suites may provide 500 transition options, they may not all be appropriate for inclusion in every video project. Inappropriate use of transitions can detract the viewer from the message of the video and undermine the professionalism of the production. Transitions should be used only if they add value to the production such as cross dissolve to imply the passage of time.

Cuts can be made more smooth by disguising the edit points, offsetting the audio and video cuts allows the viewer to follow the continuous component while the other changes. This technique is called a split edit and there are 2 types available:

- J-cuts- Audio cut pre-empts the video cut
- L-cuts- Video cut pre-empts the audio cut

While editing a scene it is important to remember that the viewer is watching from a static position. If a subject is moving from left to right in one clip they should not be moving right to left in the next. This reversing of viewing angle is visually jarring and can be avoided by following the 180º rule. For example, in a patient interview, imagine a line joining the eye line of the interviewer to the interviewee. Once the camera positions on one side of this line have been established the cameras should never cross it as the screen position of the subject will be reversed.

EXPORT

The final stage in the workflow of the project is the exportation of the edited video material to the required medium for distribution. Typical formats for this include:

- DVD
- Electronic video – File Formats, Mpg, QuickTime, AVI, H.246

SUMMARY

This article has proposed a basic workflow technique that offers guidance for the production of high quality, professional video.

Each phase, taken in isolation is essential to the project, but it is only when the whole process is managed in an effective and controlled manner that the highest levels of production are achieved. The best quality videos hold the viewer's attention, without detracting from the content.

FURTHER READING

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