Table 9: Why and How to Move New Analytical Technologies from R&D to GMP

SCOPE:

Technologies like mass spectrometry, NMR and MAM have become key analytical methodologies in support of product development of biologics (product characterization, degradation pathway identification, process understanding, comparability assessment). If these technologies can be made operationally robust, they could be introduced into QC for biological product specification testing. In a GMP environment, these technologies will be subject to validated testing workflows, continuous tracking of instrument and method performance, greater scrutiny of documentation and data integrity, and quality system control over changes to methods, instrumentation and software.

QUESTIONS FOR DISCUSSION:

1. What are some of the motivations for using new technologies in QC for biological product specification testing (ie release and stability)?
2. Historically, what new technologies have been successfully implemented in QC for biological products? Were they entirely new tests, or did they replace existing QC technologies?
3. What are the requirements for adding a new analytical technology to product QC specification testing? What kind of data must be generated on the product attribute(s) being measured with the new tests?
4. How are the requirements different if it is an entirely new type of test (ie no prior product specification) vs replacing an existing test for the product attribute?
5. What are the challenges / main hurdles associated with adapting new technology to QC applications (e.g. instrument qualification, method transfers)?
6. What role did (should) the instrument vendors have in supporting the establishment of the new technology in a GMP lab? Did the QC environment impact their existing documentation practices and their IOPQ and PM (preventative maintenance) strategies? Did they provide support for analyst training, instrument and software validation, etc…?
7. How was the addition/change in QC testing technology for the product specifications communicated to the Health Authority? What was their feedback?

DISCUSSION NOTES:

Discussion started with the question: Why would a new technology be desirable to be implemented in QC? Could it increase production consistency?

As innovative methods may allow to control a higher amount of quality attributes there is the chance that trends (e.g. higher impurity profile due to raw material) in manufacturing may be detected. Potentially first step would be to include innovative assays into monitoring activities.

As there is a strong line between QC and development testing hurdles to include methods in QC are still existing as Expectations are significantly different.

In addition there myth that a method needs to be simple to qualify for QC testing is alive. But is it not of higher importance that a method needs to be robust? As a consequence you need QC colleagues in a multidisciplinary development team as they only can give the respective inside, e.g. software version control (automated update), how to handle unexpected peaks, etc...

As a recent new technology which tries to find its way into QC MAM methodology was discussed. How is the status there? TO the round table participants it seemed that it is still used mainly in development environment, no evidence so far that pass/fail criteria are set/accepted in dossier for original submissions. In addition global rollout of a dossier containing MAM might be tricky, as some countries require local release and as a consequence transfer of methodology to local CROs.

Another important point raised in the discussion, is the relevant role of instrumentation vendors for supporting development of methodologies into QC environment. There are vendors which are interested in bringing technology into regulatory files as QC methods and support respectively, others less. There needs to be a intense relationship with customer to find out the right expectations and allow for respective solutions, as QC departments need reliable instruments with constant performance over decades.