GVIRF 2014: Contributions of Regulatory Science to Vaccine Access	
Rapporteurs: Gopa Raychaudhuri, Vincent Ahonkhai, Nick Obiri	
Session Outline	**Chair: Norman Baylor and Helen Rees** **Opening remarks:** "Regulatory science" describes the development and use of new tools, standards, and approaches necessary to assess the quality, safety, efficacy, potency, and performance of medical products. Regulatory science is critical for advancing product development and science-based decision making for licensure of vaccines, and throughout the product life cycle. Investment in regulatory science is critical to improve access to safe and effective vaccines, and is integral to the mission of the Global Vaccine Action Plan. **Presentations: Teeranart Jivapaisarnpong (MoPH Thailand) and Marion Gruber (US FDA)** Teeranart Jivapaisarnpong presented a case study to demonstrate the importance of laboratory research to support evaluation and licensure of new vaccines. As an example, she discussed the experience in Thailand with development of live attenuated influenza vaccine (LAIV). Marion Gruber presented a case study demonstrating how innovation in regulatory science can inform the regulatory process to facilitate the development of new vaccines. Specifically, she discussed the development of new tools to evaluate the safety of novel cell substrates for manufacture of viral vaccines, and the critical contribution of this information to regulatory decision-making. **Discussants: Norman Baylor, Helen Rees, Teeranart Jivapaisarnpong, Marion Gruber, Vincent Ahonkhai, David Wood** The panel discussion focused on the following questions: • How can regulatory science enhance global access to vaccines for emerging infectious diseases? • What are barriers to introducing regulatory science into less-resourced National Regulatory Authorities? • What are potential solutions to barriers to introducing regulatory science into less-resourced National Regulatory Authorities **Closing Remarks**: Closing remarks are captured in the "Discussion Outcomes" listed in the "Summary" section below. Briefly: • Regulators must have scientific expertise, tools, and data to support regulatory decision making and policy development. • International collaboration, including scientific and regulatory information sharing with regulatory counterparts and international health agencies, can facilitate establishment of a common set of principles for making regulatory decisions. • Regulatory science can play a pivotal role in increasing access to safe and effective vaccines by facilitating development and providing the scientific foundation for regulatory decision-making.
Objectives of the session	The objective of this workshop was to discuss, using two case studies, how scientific research and innovation can advance product development and inform regulatory decision making to increase global access to safe and effective vaccines.
Main outcome	Investment of sufficient resources for regulatory science research is important for scientific innovation and promoting science-based decision making throughout the product life cycle. Collaboration and partnerships are essential between academia, industry, regulators, NGO's, WHO, etc., to optimize use of resources and avoid duplication of effort. Sharing information within the global framework is important to facilitate rapid exchange of knowledge. Regulators emphasized the importance of having scientific expertise to review the data, and understand its regulatory implications. Collaboration and information sharing, and discussion in open public meetings was highlighted as a key goal to ensure that the best approaches are used for product development and regulatory decision making, and to work towards convergence, where feasible.
Summary (400-500 words)	Two case studies were presented to demonstrate the contribution of regulatory science to increase access to new vaccines. Case study 1 by Teeranart Jivapaisarnpong was a review of development of LAIV in Thailand, and the challenges faced by Thai scientists due to lack of experience in several areas including testing of virus seeds for attenuation in ferrets, designing toxicity studies and interpreting abnormal results, measuring

	immune responses in clinical trials, development of a potency assay, and other functions. Thai scientists received advice from regulators and experts from other countries, and collaborated with more experienced laboratories to standardize methodologies. Collaboration and information sharing was key to development of LAIV in Thailand, and it provided experience and built capacity for future vaccine development efforts in Thailand. Case study 2 by Marion Gruber was a review of CBER/FDA's approach to assess the safety of cell lines derived from human tumor cells for vaccine manufacture. New cell substrates may be desirable for vaccine production for a range of reasons (e.g., virus growth advantage, more rapid scale-up, ability to grow in serum-free medium or in suspension culture etc.). Factors that could potentially convey risk from tumor-derived cells were identified (e.g., biological activity of cellular DNA, adventitious agents), and new tools were developed to assess the potential risk. In combination with conventional assays, the new tools were used to address the issue in a scientifically rational manner, and quantitatively, when possible. Information sharing in open public meetings, and input from an independent Advisory Committee were important for public transparency and communicating the scientific basis for regulatory decision making on this issue. Public communications such as these are critical for maintaining public confidence in vaccines. Discussion Outcomes: • Establish "Centers of Excellence" with adequate resources to develop state of the art technology and have the knowledge to apply the information for regulatory decision making. • Promote information sharing within global framework to facilitate rapid exchange of knowledge and information, and avoid duplication of effort. • Make stronger case to policy makers regarding importance of adequate financial investment in regulatory science research activities. • Parallel reviews between stringent and developing/emerging economy country regulators can be a means to strengthen ability to review licensing applications and build regulatory capacity. • Promote early discussion between manufacturers and regulators especially when considering new approaches and alternative technologies for product development. • Consider "generic" modeling for different scenarios to assist risk-benefit assessments as a potential mechanism to aid regulatory decision making for accelerated approvals. • Regulatory science research may be needed to address issues that arise post-licensure (e.g., finding of PCV in Rotavirus vaccine) so capacity for this research should be maintained. • Strategies are needed to evaluate benefits of new approaches or methods post-implementation. • Global commitment is needed to strength NRAs in developing countries. Resource limited countries should consider relying on work done by more stringent regulatory authorities (leverage resources). NRAs need access to information but every NRA does not need to have expertise and capacity in all areas. Countries can do risk based assessment for issues relevant to their specific population (conduct limited review) but otherwise they should consider relying on reviews of more stringent NRAs. • Communication and collaboration/partnerships are essential between academia, industry, regulators, NGO's, WHO, etc., with sharing of information to avoid duplication of effort. • Tools are available but they need to be used more effectively for rapid evaluation of new vaccines. • Encourage inclusion of "regulatory science" in the "regulatory systems strengthening" resolution that will be discussed at the 2014 World Health Assembly meeting.
Key references or quotes (up to 5)	• Publication: A Global Regulatory Science Agenda for Vaccines Elmgren L., et al, Vaccine 31S (2013) B163-B175 • FDA Briefing Document: "Cell Lines Derived from Human Tumors for Vaccine Manufacture" for Vaccines and Related Biological Product Advisory Committee meeting on September 19, 2012. http://www.fda.gov/downloads/AdvisoryCommittees/CommitteesMeetingMaterials/BloodVaccinesandOtherBiologics/VaccinesandRelatedBiologicalProductsAdvisoryCommittee/UCM319573.pdf • Guidance for Industry: Characterization and Qualification of Cell Substrates and Other Biological Materials Used in the Production of Viral Vaccines for Infectious Disease Indications (February, 2010) http://www.fda.gov/downloads/BiologicsBloodVaccines/GuidanceComplianceRegulatoryInformation/Guidances/Vaccines/UCM202439.pdf