Table 1. Objectives, motivations, and deliverables for our proposed QIBA project.

Objective	Motivation	Deliverable
1. Establish settings for all US scanners participating in the QIBA initiative. This includes the following: minimize MB contrast agent destruction, maximize detection of MB signal and suppression of tissue signal.	Standardization of US equipment so clinical measurements made on various systems will provide matched results.	Provide a profile for optimal clinical use of CEUS, including optimal scanner settings.
2. Establish and validate US data linearization scheme (raw vs empiric).	Select one of several schemes presently being evaluated for standardization. Use raw vs compressed data?	Provide recommended linearization scheme to partnering vendors.
3. Select appropriate indicator-dilution model for curve fitting to CEUS-derived time-intensity curve data.	Improve time-intensity curve analysis and noise suppression and standardize procedure.	Provide recommended indicator-dilution model for quantification software adoption.
4. Select appropriate CEUS software for quantification of tissue perfusion.	Select one (or more) of the several programs presently available for standardization (or develop our own).	Provide list with recommended CEUS image quantification software.
5. Evaluate impact of microbubble-related factors (concentration and administration)	Assure that all users of CEUS quantification use a standardized dose and administration method for consistent results	Dose per volume blood and administration method.
6. Evaluate intra- and inter-site variability of the estimates of the bolus kinetics parameters (I_{PK}, T_{PK}, *AUC*, *WIR, WOR*)	Perfusion quantification results should be easily reproducible researchers, sites, systems.	Variability of bolus kinetic parameters within an agreed threshold.
7. Evaluate ability to correlate bolus kinetics parameters with flow rate in the flow phantom for flows 10 to 1000 mL/min	Establish a relationship of flow rate with CEUS quantification parameters and confirm across sites	Establish a relationship of flow rate with CEUS quantification parameters and confirm across sites

Table 2. Detailed timeline for our proposed QIBA project.

Duration	Activity
Months 1 – 2	Construct and test tissue-mimicking flow phantom at different sites.
Months 1 – 4	Evaluate and further develop quantification software (linearization, cine size, and time-intensity curve fitting and tissue perfusion parametric estimation.
Months 2 – 6	Evaluate and optimize clinical US systems for tissue perfusion quantification (MB signal detection sensitivity, tissue signal suppression, minimize MB destruction during CEUS imaging, and standardization of US scanner settings).
Months 4 – 10	Confirm linear range for US image intensity vs MB concentration relationship (per US system).
Months 8 – 12	Perform and validate bolus quantification measurements. Correlated flow rate with quantification parameters. Perform intra-site and inter-site statistical analyses.
Month 12	Compile and deliver final report with all experimental results.