

Synthesizing Priority IS HIV Co-morbidity Research Questions

- **OPTIMIZE SCREENING**

- How can we improve screening and documentation of HIV and co-morbid diseases?
 - Includes capacity issues for mental health & issues; obesity; diabetes;
 - Includes statins, CVD risk, valid models of data using modeling, analytics, novel measurement techniques, etc.

- **PRE-IMPLEMENTATION**

- What are the specific co-morbid diseases? Risk categories, developmental ages, groups?
 - Diabetes
 - Obesity
 - HLBS

- **INTERVENTION FOR COMORBIDITIES**

- What are the best models/strategies for evidenced based collaborative care? How can we use the existing HIV infrastructures for care?
 - Are there other implementation models from other diseases to be tested?
 - Can we use data modeling, predictive analytics to improve treatment and care of HIV & comorbidity?
 - Primary care models vs specialty care models? How do we do this globally, in LMICs?
 - Do we have the available workforce and economic structure?
 - Can we test the various healthcare structures for comorbidity care through interventions for scale up?
 - (e.g. task shifting vs delivering statin; different models of service delivery; different service providers for MH into routine HIV care for LMIC settings; patient engagement models)
 - Dual care models
 - Knowledge from specialist to primary care ↔ primary care to specialist: TRANSFER of KNOWLEDGE. E.g.
 - Poor statin use in HIV population in existing research in US study
 - Hypertension can be more important than lipids (LMIC vs US)--- context important
- Competencies
 - Knowledge transfer/Skills Transfer
 - (Budget Implications—core IS priority)

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- **CONTEXT**

- US & LMIC
- Implementation outcomes defined for HIV co-morbidity

- **MODELING (SIMULATION)**

- Actionable targets and outcomes using streams of data available
 - Sensors, integrated devices, EMR, smart phones, etc.
 - Privacy issues due to marketing, people do not tell truth in apps (e.g. age, weight, height)
 - People do bring phones and calendars, important source of information to assist with data information paired with interviews, in person data for validity
 - E.g. adolescents not in clinics, unaffiliated with clinics,
 - in person interventions with online hybrid space: e.g. web based smoking, digital interventions
- Prevalence and burden over time: **MODELING EXAMPLES**
 1. Understanding heterogeneity, understanding how strategy would be different,
 2. Cost effectiveness: traditional against threshold vs optimization; looking at multiple strategies, not looking at just one outcomes, trying to optimize many different ones, many together or constrain some of the solutions
 3. Data driver; allow for interaction, intervention might change what others will do, downstream effects, allow for others to adapt

Novel Observational & Experimental IS Research Designs

- Approaches
 - Mixed methods :
 - Qualitative and quantitative methods?
 - Why it does not get implemented into practice?
 - Regression discontinuity designs
 - Certain level of intervention based on where they fall on cut point of severity, fits well with natural experiments
 - E.g. ASCVD (Atherosclerotic Cardiovascular Disease) risk scores comparing those who fall above and below high risk cut point
 - Depression screening and SSRIs.
 - Adaptive, SMART designs
 - e.g.. Deciding on pharmacotherapy, looking at costs
- Online/Web treatment
- SBIRT for various comorbidities, and other models from different comorbidities in adaptive designs
- Adolescent vs Adult Research Design considerations
 - Technology based vs other models in person, support based

Novel Observational & Experimental IS Research Designs

- De-implementation

- e.g. existing two structures in health, perhaps more cost, optimization analyses
- Cultural aspects implementation at patient, provider, system and community level
- Modeling complexity
 - Can think of strategies implementation and de-implementing at same time
 - Need data on those formative components, quasi-experiments to inform models
 - Can inform unintended effects
 - Happening may not be measured, implementation may have downstream negative or positive downstream effects
 - Adjacency : two data streams in same direction, validating approach
 - E.g. mortality indicator, person dead adjacent to data on medication that is life saving.

- Dis-implementation

- Studying the natural experiment of de-implementation

Implementation Science Training

- Resources for US and Global Implementation Science (to be culled)
- Case studies needed from early to late phase, both success and failures, for constructive learning
 - e.g. CTSA, implementation science training programs, CFARs, local community, global sites....repositories?
- Key principle: involve multidisciplinary team early on
- Core Issues
 - Both HIV researchers and IS researchers need cross-training
 - Multi-disciplinary teams needed
 - Mid-career and senior career training needed
 - Generalist to specialist training needed for range or roles in research projects
 - Core Design Fundamentals, for example:
 - Quasi experimental
 - Cost effectiveness/health economics → policy implications, financing, sustainability
 - Stepped wedge designs
 - Mixed methods
 - Behavioral economics
 - Health behavior
 - Health communication
 - Technology developers