Appendix 1: Literature Review of Associated Frameworks in Healthcare

Table A.1 : List of established frameworks presently used in healthcare, their focus and the highlights that are applicable in developing metrics to comprise the PH Innovation Evaluation Framework.

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| Citation | Title | Focus | Highlights | Metrics used |
| 1 | Multiple Criteria Decision Analysis (MCDA) for evaluating new medicines in Health Technology Assessment and beyond: The Advance Value Framework  | Innovation Value for stakeholders | - Disease targeted by Innovation- Intervention provided by Innovation- Safety considerations in using the Innovation- Ease of Use, Useability, Novelty of Innovation- Expected Impact of Innovation | - Burden of disease (severity, availability, prevalence)- Therapeutic- Safety (adverse events, tolerability, contraindications)- Innovation (clinical novelty, nature of treatment, ease of use and comfort)- Socioeconomic (public health, budget impact, social productivity) |
| 2 | IDEAL-D: a rational framework for evaluating and regulating the use of medical innovations | Evaluating Use | - Novelty of Innovation- Registration of Innovation (for discoverability)- Safety and Efficacy of Innovation- Evidence of Effectiveness of Innovation- Risk Assessment and Regulation of Innovation  | - Evidence (safety, reliability, efficacy, randomised controlled trials) - Innovation (Intellectual property, universal registration of product, do other similar devices exist?, comparative effectiveness) - Risk assessments and regulation (Quality Assurance) |
| 3 | Using Mobile Technology for Cardiac Rehabilitation: A Review and Framework for Development and Evaluation  | Evaluation metrics | - Disease Assessment, Patient Characteristics and Environment Assessment undertaken by the Innovation- Intervention of Innovation- Ease of Use, Personalisation of Innovation- Usability of Innovation- Expected Patient Impact of Innovation- Efficacy and Evidence of Innovation | - Core clinical components (patient assessment, patient‐centered outcomes)- Usability (tailored features)- Impact (improve patient‐centered outcomes) - Cost- Evidence (efficacy, randomised controlled trials) |
| 4 | On the Definition and Evaluation of Telemedicine  | Evaluation metrics | - Impact of the Innovation- Efficacy, Effectiveness, Safety, Accessibility, Quality, Cost- Claim of the Innovation- Accuracy, Reliability, Precision, Sensitivity/specificity- Evidence of Innovation- End-to-end Intervention of Innovation (Content of Care)- Impact on Patient Outcomes- Functional status, satisfaction, access to care, knowledge, attitude | - Evidence (efficacy, effectiveness, safety)- Accessibility- Quality- Cost- Claim (performance, accuracy, reliability, precision, sensitivity/specificity)- Perspectives of client, provider, and societyMethodology of evaluation (clinical trials, surveys, controlled experiments) - Content of care (diagnosis, treatment, prevention)- Effects on Clients (functional status, satisfaction, access to care, knowledge, attitude) |
| 5 | End-to-End Infrastructure for Usability Evaluation of eHealth Applications and Services  | Evaluation Metrics | - Usability of Innovation- Efficacy and Evidence of Innovation | - Usability testing in health service context- Evidence of efficacy |
| 6 | CONSORT-EHEALTH: Improving and Standardizing Evaluation Reports of Web-based and Mobile Health Interventions | Information Metrics | - Meta Data of Innovation (Developer, Sponsor, Version)- Usability and Evidence of Innovation- Usability and Evidence of Version of Innovation- Claim of Innovation- End-to-end Intervention of Innovation (Content of Care, Features, Use in Practice, Clinician Involvement) available online.- Safety, Privacy, Security of Innovation- Training and Support of Innovation | - Novelty (who developed and who owns it)- Evidence (user testing of version) - Quality assurance (accuracy of claims) - Replicability - Information management (online information about innovation)- Security (privacy considerations) - Usability (components, features, how is intended to be used)- Expected level of involvement from assistance (e.g. clinicians) - Expected level of engagement- Training/support |
| 7 | The eSana Framework: Mobile Services in eHealth using SOA  | Service Architecture | - Security of Innovation- Privacy of Innovation- Interoperability and integrability of Innovation (particularly with legacy systems)- Implementation of Standards in Design and Development of Innovation- End-to-end Intervention of innovation (Features, Use in Practice) | - Process integrity (interoperability)- System integration- Security (privacy, investment)- Functionality (features, usability)- Efficacy of implementation |
| 8 | An Evaluation Framework for Adaptive Security for the IoT in eHealth  | IoT Considerations | - Security of Innovation- Impact and Evidence of Innovation | - Security requirements- Quality of service  |
| 9 | A framework for clinical evaluation of diagnostic technologies  | Evaluations Considerations | - Claim, Efficacy and Evidence of Innovation- End-to-end Intervention of Innovation- Safety of Innovation (context of being used outside of original purpose)- Accuracy of Innovation- Impact of Innovation (on health services)- Intervention of Innovation (Clinical Impact)- Expected Patient Outcomes of Innovation | - Technical capability (perform within specifications)- Range of possible uses- Diagnostic accuracy- Impact on health care providers- Therapeutic impact - Patient outcome |
| 10 | Health technology assessment: A comprehensive framework for evidence-based recommendations in Ontario  | Holistic considerations | - Expected Patient Outcomes of Innovation- Efficacy, Safety of Innovation- Condition Information, which Intervention of Innovation Targets- Integrability and integrability of Innovation- Novelty of Innovation- Impact of Innovation | - Clinical benefits (effectiveness, safety, burden of illness, need)- Consonance with social and ethical values (societal values regarding appropriate usage, ethical issues inherent in using or not using it)- Efficiency (value for money) - Impact (ease of integration to healthcare, economic feasibility, organizational feasibility) |
| 11 | The Future of Precision Medicine: Potential Impacts for Health Technology Assessment  | Holistic Considerations | - Intervention of Innovation- Evidence of Innovation- Targeted Users of Innovation- Continual Interaction and Engagement of Innovation | - Complexity of the problem being solved- Evidence- Equity considerations- Frequency of guidance updates |
| 12 | eHealth solutions in the context of Internet of Things  | Architecture Considerations | - Data Collection of Innovation- Data Transactions of Innovation | - Flexibility regarding the functionalities- Data collection (processing unit, data acquisition module)- Data communication |

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