Supplemental Table 1 Code Structure

Covid Protect Final Code Structure

10  Features of the innovation (higher level design principles or properties of the innovation; the innovation is the full bundle including e.g., software, VCTs, local councils, call centers patient survey)
   10a. Adaptation (e.g., make innovation fit, refine based on user need/experience, tailor to each locality)
   10b. Perceived value/need for the innovation (e.g., by GPs, patients, voluntary sector)
   10c. Includes cross sectoral data integration for risk assessment (e.g., council data, NHS data specification)
   10d. Novelty of the idea (e.g., started from scratch, organically grown, never done anything like this)
   10e. Leveraging something that exists for new challenge (e.g., Eclipse +/-, TZ experience, training platform)
   10f. Learn as you go (e.g., piloting, PDSA/iterative cycles, starting small before scaling)
   10g. PSL company (anything related to clinical leadership, organizational culture, software development)

20  Wider context (the larger local/regional/national ecology surrounding the project, various forces that might influence design and scale up)
   20a. Political/regulatory/structural (e.g., pre-COVID IG rules, risk aversion of NHS, ICS, GP practices’ autonomy, CCGs as strong peer network, recent merger of 5 CCGs, many local councils)
   20b. Socio cultural demographic geographic factors (e.g., persistent, pre-COVID, challenges in deprived areas, close sense of community, local pop identity, regional tensions, low literacy)
   20c. Broad forces related to the COVID-19 Pandemic (e.g., catalyst for change, sense of urgency, collectivism, ‘get on the train and direct it’, uncertainty of pandemic impact, remote working)
   20d. National/regional COVID response efforts (e.g., COPI, Shielding policy and lists, funding rules)

30  Individual/team behaviors in COVID protect project (behaviors and attributes of individuals, regardless of organizational base, job title, position in the hierarchy)
   30a. Leadership (e.g., visionary, forward thinking, creativity, self-awareness, decisiveness, provide visible executive/senior management support, value all, inspire, turn up the heat/competition, individual behavior of seeking input/connecting to front line)
   30b. Boundary spanner (e.g., work at higher strategic level, speak others’ language, bridge silos, align interests across regional/local and NHS and local authorities)
   30c. Champions (e.g., advocate for the project, interface with GPs/skeptics, push through barriers)
   30d. Problem solving (e.g., no script, work it out, push forward pragmatic)
   30e. Commitment to the project (e.g., tenacity, perseverance, teamwork, outside comfort zone, motivation, individual risk tolerance)
   30f. Generosity (e.g., of spirit, volunteering time, resources, software, expertise)
   30g. Burden (e.g., stress, strain, overwhelming responsibility, long hours)
   30h. Flexibility (e.g., team’s ability to respond to broader changing org/environment, not adapting the project design per se (that is 10a), giving up control to advance the project)
<table>
<thead>
<tr>
<th>30i.</th>
<th>Background, training, skills, clinical/operational expertise of ALL roles regular and within COVID Protect (e.g., breadth complementarity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30j.</td>
<td>Followership (e.g., support leader, endorse/oppose, manage themselves, take responsibility)</td>
</tr>
</tbody>
</table>

### 40 Coordination/communication

- **how communication and coordination of functions was managed, communication for aligning interests, documents that exist and are disseminated to support project implementation and broader visibility**

#### 40a. Project governance structures to support communication (e.g., meetings, agendas, both senior/central team and the localities)

#### 40b. General communications (e.g., flow diagrams, emails, patient letters, external facing)

#### 40c. Gaps/failures in communications (e.g., where communications fell down)

#### 40d. Translate national guidance (e.g., make sense for team/others, help patients with shielding regs)

### 50 Receptivity/resistance/tensions

- **descriptions of responses to all aspects of the project such as concerns about risks, burden/hassle, personal willingness to participate regardless of whether it is perceived as needed generally**

#### 50a. Of GP practices, GPs, practice managers, practice staff

#### 50b. Of implementing partners (e.g., virtual clinical teams, local councils, universities, medical students, retired GPs, volunteers, paramedics, ambulance services)

#### 50c. Of patients/families (e.g. skepticism re: scams, digital literacy/comfort with tech)

#### 50d. Strategic NHS (e.g., NHS England, NHS Midlands and East, STPs)

### 60 COVID Protect goals and outcomes

- **references to project aims, views on success**

#### 60a. Aims (e.g., goals, protect from COVID, precise targeting of patients, setting boundaries)

#### 60b. Intended outcomes (e.g., metrics, impacts, evaluation plan and measuring value)

#### 60c. Unintended effects (e.g., uncovering and supporting response to unmet social care needs like food, loneliness, patient gaming system, unable to cope with/address uncovered need)

#### 60d. Evolution (e.g., sustainability, replicability adaptation into Protect NoW, de-implementation, populational health management initiatives)

### 70 Project implementation/project delivery

- **detailed descriptions of any aspect of running the project, e.g., database merger, survey administration, training call center staff**

#### 70a. Infrastructure supports (e.g., software and other operational needs, remote working, call centers)

#### 70b. Data collection with patient surveys

#### 70c. Referrals (to GPs, local council)

#### 70d. Use of data (e.g., creating visuals and other reports for decisionmaking, performance management, targeting patients)

#### 70e. Human resources (e.g., training, volunteer/redeployed staff, tasks/roles, overstaffing, overqualified, wellbeing supports, staff overburdened, inadequate capacity, manage competing demands/priorities)

#### 70f. Collaboration among complementary/diverse organizations (and note any missing orgs)

#### 70g. Challenges (e.g. remote working, designing systems and procedures, manual logistics)

#### 70h. Creation of supporting documents (e.g., SOPs, building Excel tools to manage the systems)

#### 70i. Project design (e.g., nuts and bolts descriptive details of how program worked, was organized, central and locality teams, variation in organization between localities, project management/reporting generation/tracking, monitoring)
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>70j</td>
<td>Pace of implementation (e.g., rapid, faster than usual)</td>
</tr>
<tr>
<td>70k</td>
<td>Costs (e.g., in-kind, redeploying within system, hidden, volunteer time, associated risks)</td>
</tr>
<tr>
<td>80</td>
<td>Relational aspects of the project <em>(ways of working, team members worked together, interpersonal and group dynamics, this is in the doing of COVID Protect itself)</em></td>
</tr>
<tr>
<td>80a</td>
<td>Stakeholder engagement (e.g., GPs, patients, local councils, strategic NHS; might double code with communication, but more about framing/listening/aligning interests, being responsive)</td>
</tr>
<tr>
<td>80b</td>
<td>Trust/buy-in (e.g., within the project team and across organizations, existing/new trust, relationship, history, rapport, eroded by risk of sharing data, confidentiality one locality refused to join)</td>
</tr>
<tr>
<td>80c</td>
<td>Psychological safety (e.g., feeling free to speak up with a divergent view)</td>
</tr>
<tr>
<td>80d</td>
<td>Perspective taking (e.g., actively seeking to understand another’s experience or expertise; distinct from empathy which is affective emotional sympathetic response)</td>
</tr>
<tr>
<td>80e</td>
<td>Empowerment of team members (e.g., explicit authority given to a person to carry out certain decisions/actions about specific aspects of project implementation; explicit designation of roles)</td>
</tr>
<tr>
<td>80f</td>
<td>Accountability (e.g., within the team, up to strategic NHSE, allowing risks on balance)</td>
</tr>
<tr>
<td>80g</td>
<td>Shared goal (e.g., ‘single minded focus’)</td>
</tr>
<tr>
<td>90</td>
<td>Hindsight <em>(things the person would do differently, looking back; can double code with others like communications, engagement, empowerment)</em></td>
</tr>
<tr>
<td>100</td>
<td>Facilitators/positive aspects or effects <em>(double code with any other code/s that are described as smoothing the path, facilitating implementation, supporting efforts)</em></td>
</tr>
<tr>
<td>200</td>
<td>Barriers/negative aspects or effects <em>(double code with any other code/s that are described as getting in the way, constraining progress, putting up barriers)</em></td>
</tr>
<tr>
<td>300</td>
<td>New ideas (any new concepts that emerge that don’t fit into other existing codes)</td>
</tr>
<tr>
<td>999</td>
<td>Great Quotes</td>
</tr>
</tbody>
</table>