**Supplement**

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| Model | “Success” Event | # Trials | Covariates and random effects |
| 1. | Hand hygiene | Opportunities | program\*months + (program\*months|Unit) |
| 2. | HH w/ Gloving | Opportunities | program\*months + gloving +  (program\*months|Unit) |
| 3. | C diff | Patient Days | gloving + hand hygiene + (1|Unit) |
| 4. | CAUTI | Catheter Days | gloving + hand hygiene + (1|Unit) |
| 5. | CLABSI | Line Days | gloving + hand hygiene + (1|Unit) |

Table 1: Models 1-5

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| Model | “Success” Event | # Trials | Covariates |
| 6a | C diff | Patient Days | s(months\_since\_program) + (1| Unit) |
| 6 | C diff w/ gloving | Patient Days | s(months\_since\_program) + hh\_cat +  glove\_rate + (1|Unit) |
| 7a | CAUTI | Catheter Days | s(months\_since\_program) + (1| Unit) |
| 7 | CAUTI w/ gloving | Catheter Days | s(months\_since\_program) + hh\_cat+  glove\_rate + (1|Unit) |
| 8a | CLABSI | Line Days | s(months\_since\_program) + (1| Unit) |
| 8 | CLABSI w/ gloving | Line Days | s(months\_since\_program) + hh\_cat+  glove\_rate + (1|Unit) |

Table 2: Models 6a, 6, 7a, 7, 8a, 8