Written evidence from Stuart Calimport

Dear Committee,

Re: Anti-microbial Resistance Inquiry

I would like to suggest a number of items to look to with regards to anti-microbial resistance (AMR).

Research & Innovation

1) Enhanced investment across research focuses
   a. AMR risk prevention
      i. Hospital microbiome optimisation
   b. Clean meat and plant-based meat alternatives
   c. Disinfectant and decontamination
      i. Combinatorial approaches
         1. Research and testing
            a. Directed evolution mitigation
   d. Bioprospecting
      i. Swamps and other still water environments and high microbial load environments, and species therein
      ii. Livestock populations – for resistant or immune individuals
      iii. Endemic areas - for resistant or immune individuals
         1. Hospital-based
         2. Non-hospital based
      iv. Competitor microbe species for enhanced hospital microbiome
   e. In silico design
   f. Directed evolution
   g. Broad spectrum antibiotics
   h. Vaccine research
      i. Hospital acquired infections
      ii. Non-hospital acquired infections
   i. AMR strain resistance loss modelling
   j. AMR strain maximum number of resistances modelling
      i. Maximum number of resistances versus infectiousness versus replication capacity versus microbial competition capacity
   k. Risk modelling
      i. Hospitals
      ii. Patient categories
      iii. International travel
      iv. Global spread

2) Research and innovation strategy
   a. Challenge prize strategy
      i. AMR strain resistant hospital design
ii. AMR strain resistant ward design
iii. Detection in environment
iv. Diagnosis in patient
v. Disinfectant and decontamination
vi. Vaccine development
vii. Antibiotic discovery
viii. Hospital microbiome optimisation
ix. General practice prescribing reduction with increased patient outcomes
x. Agricultural antibiotic reduction
xi. Clean meat and plant-based meat alternatives

Public Health

1) Standing unit set up to monitor AMR nationally and globally and reporting directly to Prime Minister

Healthcare

I would like to suggest that the Committee look to the following:

1) Design of hospitals and hospital retrofitting
   a. Surface design and materials
   b. Influx and aeration of external air and particulate matter – where such external microbiome may compete with internal building microbiome creating an environment resistant to strain evolution and spread
   c. Ward and thoroughfare modelling and design in relation to reducing AMR risk
   d. Ward development
      i. Wards that reduce risk of AMR strain evolution
      ii. Wards that reduce risk of AMR strain spread
      iii. Wards that remove patients from high risk areas to those designed to mitigate AMR
   e. Joined up design with appropriate disinfectant and decontamination strategies

2) Clinical pathways
   a. Integrate AMR strategy into clinical pathways for AMR risk reduction

3) Disinfectant and decontamination strategy
   a. Combinatorial approaches
   b. Ward and corridor strategy
   c. Surgical theatre strategy

Agriculture & Rural Affairs

1) Modelling risk reduction from incentivising particular agricultural produce distribution and appropriate agricultural incentives
2) Joined-up AMR targets with environmental audit targets and National Risk Register risk reduction with regards to agricultural incentives and agricultural research and innovation
3) Enhanced AMR-focused livestock regulations

**Foreign policy & International policy**

1) Review UN Global Action Plan actions and effectiveness
2) Enhanced development of AMR-based diplomacy initiatives
   a. UN
      i. Develop UN Global Action Plan
         1. Clean meat and plant-based meat alternatives
         2. AMR-focused agricultural targets linked up to global environmental goals
         3. Design of hospitals
         4. Knowledge sharing agreements
         5. International research initiatives
            a. Ecosystems
            b. Livestock
            c. Endemic areas
      ii. Global Goals development
          b. G7 and G20
             i. Review actions and effectiveness
          c. Individual states
             i. Enhanced collaboration relating to research and innovation and AMR risk
3) Enhanced AMR-focused endemic area Foreign Office travel guidelines

Thank you for your time.

Best regards,

Dr Stuart Calimport MSc DIC MA MPhil

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