## Supplementary Materials: Additional Tables

**Table S1:** The changes in the level and associated activation values (AV1) of the components to represent three severities of the nine scenarios that were assessed (chosen *a priori*) in a fuzzy cognitive map of the emergence and transmission of antimicrobial resistance in a Swedish One Health system for their ability to reduce antimicrobial resistance and other negative impacts associated with antimicrobial resistance. These scenarios represent four interventions under current conditions (scenario 1-4) and under climate change conditions (Scenario 6-9) and the climate change scenario (Scenario 5).

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| **Scenario 1 and 6: Increased infection prevention and control measures** | | | | |
| **Component** | **Baseline**  **(AV1)** | **Low intensity**  **(AV1)** | **Medium intensity**  **(AV1)** | **High intensity**  **(AV1)** |
| Non-antimicrobial disease prevention and control in health and social care | Medium  (0.5) | Medium-high  (0.63) | High  (0.75) | Very high  (0.88) |
| Non-antimicrobial disease prevention and control in food-producing animal agriculture | Medium  (0.5) | Medium-high  (0.63) | High  (0.75) | Very high  (0.88) |
|  | **Scenario 2 and 7: Educational campaigns and antimicrobial awareness** | | | |
| **Component** | **Baseline**  **(AV1)** | **Low intensity**  **(AV1)** | **Medium intensity**  **(AV1)** | **High intensity**  **(AV1)** |
| Appropriate prescribing | Medium-low (0.38) | Medium  (0.5) | Medium-high  (0.63) | High  (0.75) |
| Consumer demand for AMs | Medium  (0.5) | Medium-high  (0.63) | Medium  (0.5) | Medium-low  (0.38) |
| **Scenario 3 and 8: Educational campaigns and Increased infection prevention and control** | | | | |
| **Component** | **Baseline**  **(AV1)** | **Low intensity**  **(AV1)** | **Medium intensity**  **(AV1)** | **High intensity**  **(AV1)** |
| Non-AM disease prevention and control in health and social care | Medium  (0.5) | Medium-high  (0.63) | High  (0.75) | Very high  (0.88) |
| Non-AM disease prevention and control in food-producing animal agriculture | Medium  (0.5) | Medium-high  (0.63) | High  (0.75) | Very high  (0.88) |
| Appropriate prescribing | Medium-low (0.38) | Medium  (0.5) | Medium-high  (0.63) | High  (0.75) |
| Consumer demand for AMs | Medium  (0.5) | Medium-high  (0.63) | Medium  (0.5) | Medium-low  (0.38) |
| **Scenario 4 and 9: Increased trade regulations** | | | | |
| **Component** | **Baseline**  **(AV1)** | **Low intensity**  **(AV1)** | **Medium intensity**  **(AV1)** | **High intensity**  **(AV1)** |
| Domestic and international trade | High  (0.75) | Medium  (0.5) | Very high  (0.88) | Highest  (1.00) |
| **Scenario 5: Climate change conditions** | | | | |
| **Component** | **Baseline**  **(AV1)** | **Best case**  **(AV1)** | **Medium case**  **(AV1)** | **Worst case**  **(AV1)** |
| Disease in plant agriculture | Low  (0.25) | Medium-low  (0.38) | Medium  (0.5) | Medium-high  (0.63) |
| Food-producing animal illness | Low  (0.25) | Medium-low  (0.38) | Medium  (0.5) | Medium-high  (0.63) |
| Illness in humans | Low  (0.25) | Medium-low  (0.38) | Medium  (0.5) | Medium-high  (0.63) |
| Chronic illness in humans | Medium  (0.5) | Medium-high  (0.63) | High  (0.75) | Very high  (0.88) |
| On-farm production of conventional crops | Medium-low (0.38) | Medium  (0.5) | Medium-high  (0.63) | High  (0.75) |
| On-farm production of conventional animal-based food products | Medium-low (0.38) | Medium  (0.5) | Medium-low  (0.38) | Low  (0.25) |
| On-farm production of organic food | Very low (0.13) | Very low  (0.13) | Very low  (0.13) | None  (0.00) |
| Movement of people | Medium  (0.5) | Medium-high  (0.63) | High  (0.75) | Very high  (0.88) |

1AV - Activation values represents the level at which the different drivers (components) of antimicrobial resistance in the Swedish One Health system context exist. The activation value can take on a value between [0,1] and was divided into eight categories to represent the different levels: none (0), very low (0.13), low (0.25), medium-low (0.38), medium (0.5), medium-high (0.63), high (0.75), very high (0.88). The initial AVs (baseline scenario) were informed by expert opinion and a literature review. The AV were increased or decreased to reflect the intervention by three levels to reflect the three intensities of the intervention (low, medium, and high intensity).

**Table S2:** The changes in level and association activation values (AV1) of the components to represent the high centrality and high outdegree test scenarios that were assessed in a fuzzy cognitive map of the emergence and transmission of antimicrobial resistance in a Swedish One Health system for their ability to reduce antimicrobial resistance and other negative impacts associated with antimicrobial resistance.

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| **High centrality scenario** | | |
| **Component** | **Level in baseline (AV1)** | **Level in scenario (AV1)** |
| Animal welfare | Medium-low (0.38) | Highest (1) |
| Retail cost of food | High (0.75) | None (0) |
| Appropriate prescribing | Medium-low (0.38) | Highest (1) |
| Understanding and awareness | Medium (0.5) | Highest (1) |
| Type of production system | High (0.75) | Highest (1) |
| Development of alternatives to antimicrobials | Low (0.25) | Highest (1) |
| Amount of imported product | High (0.75) | None (0) |
| Development of new antimicrobials | Low (0.25) | Highest (1) |
| Production costs | Medium (0.5) | None (0) |
| Population vulnerabilities | Low (0.25) | None (0) |
| **High outdegree scenario** | | |
| **Component** | **Level in baseline (AV1)** | **Level in scenario (AV1)** |
| Type of production system | High (0.75) | Highest (1) |
| Understanding and awareness | Medium (0.5) | Highest (1) |
| Development of alternatives to antimicrobials | Low (0.25) | Highest (1) |
| Domestic and international trade regulations | High (0.75) | Highest (1) |
| Diagnostics | Medium-low (0.38) | Highest (1) |
| Retail cost of food | High (0.75) | None (0) |
| Population vulnerabilities | Low (0.25) | None (0) |
| Appropriate prescribing | Medium-low (0.38) | Highest (1) |
| Good farm practices | Medium (0.5) | Highest (1) |
| Development of new antimicrobials | Low (0.25) | Highest (1) |

1AV - Activation values represents the level at which the different drivers (components) of antimicrobial resistance in the Swedish One Health system context exist. The activation value can take on a value between [0,1] and was divided into eight categories to represent the different levels: none (0), very low (0.13), low (0.25), medium-low (0.38), medium (0.5), medium-high (0.63), high (0.75), very high (0.88). The initial AVs (baseline scenario) were informed by expert opinion and a literature review. The AV were increased or decreased to their highest (1) or lowest (0) possible value.

**Table S3:** The changes in the weights1 of the relationships to represent three severities of the eight scenarios that were assessed (chosen *a posteriori*) in a fuzzy cognitive map of the emergence and transmission of antimicrobial resistance in a Swedish One Health system for their ability to reduce antimicrobial resistance and other negative impacts associated with antimicrobial resistance. These scenarios represent four interventions under current conditions (scenario 10-13) and under climate change conditions (scenario 14-17).

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| **Scenario 10 and 14: Reducing cost as a barrier** | | | | | |
| **Component 1** | **Component 2** | **Baseline**  **(weight1)** | **Low intensity**  **(weight1)** | **Medium intensity**  **(weight1)** | **High intensity**  **(weight1)** |
| Animal welfare | Production costs | Medium (0.5) | Medium-weak (0.38) | Weak  (0.25) | Very weak (0.13) |
| Animal welfare | Retail cost of food | Strong  (0.75) | Medium-strong (0.63) | Medium  (0.5) | Medium-weak (0.38) |
| Type of production system | Production costs | 0.75 | Medium  (0.5) | Medium-weak (0.38) | Weak  (0.25) |
| Type of production system | Retail cost of food | Medium (0.5) | Medium-weak (0.38) | Weak  (0.25) | Very weak (0.13) |
| Retail cost of food | Nutritional quality of food | Medium  (-0.5) | -0.38 | Weak  (-0.25) | -0.13 |
| Retail cost of food | Consumer demand for organic products | Medium-strong  (-0.63) | Medium  (-0.5) | Medium-weak  (-0.38) | Weak  (-0.25) |
| Retail cost of food | Consumer demand for animal welfare friendly products | Medium  (-0.5) | Medium-weak  (-0.38) | Weak  (-0.25) | Very weak  (-0.13) |
| Retail cost of food | Consumer demand for imported food products | Medium (0.5) | Medium-weak (0.38) | Weak  (0.25) | Very weak  (0.13) |
| **Scenario 11 and 15: Increasing trade regulations** | | | | | |
| **Component 1** | **Component 2** | **Baseline**  **(weight1)** | **Low intensity**  **(weight1)** | **Medium intensity**  **(weight1)** | **High intensity**  **(weight1)** |
| Domestic and international trade regulations | Antimicrobial use in terrestrial food producing animals | Medium  (-0.5) | Medium-strong  (-0.63) | Strong  (-0.75) | Very strong  (-0.88) |
| Domestic and international trade regulations | Antimicrobial use in aquaculture | Medium  (-0.5) | Medium-strong  (-0.63) | Strong  (-0.75) | Very strong  (-0.88) |
| Domestic and international trade regulations | Antimicrobial use in plant agriculture | Medium  (-0.5) | Medium-strong  (-0.63) | Strong  (-0.75) | Very strong  (-0.88) |
| Domestic and international trade regulations | Exposure to antimicrobial resistant organisms from imported food products | Medium  (-0.5) | Medium-strong  (-0.63) | Strong  (-0.75) | Very strong  (-0.88) |
| **Scenario 12 and 16: Increasing technological advancements and innovation in healthcare** | | | | | |
| **Component 1** | **Component 2** | **Baseline**  **(weight1)** | **Low intensity**  **(weight1)** | **Medium intensity**  **(weight1)** | **High intensity**  **(weight1)** |
| Diagnostics | Appropriate prescribing | Strong  (0.75) | Very strong  (0.88) | Strongest  (1) | Strongest  (1) |
| Development of alternatives to antimicrobials | Antimicrobial use in humans | Weak  (-0.25) | Medium-weak  (-0.38) | Medium  (-0.5) | Medium-strong  (-0.63) |
| Development of alternatives to antimicrobials | Antimicrobial use in terrestrial food producing animals | Medium  (-0.5) | Medium-strong  (-0.63) | Strong  (-0.75) | Very strong  (-0.88) |
| Development of alternatives to antimicrobials | Antimicrobial use in aquaculture | Medium  (-0.5) | Medium-strong  (-0.63) | Strong  (-0.75) | Very strong  (-0.88) |
| Development of alternatives to antimicrobials | Antimicrobial use in plant agriculture | Medium  (-0.5) | Medium-strong  (-0.63) | Strong  (-0.75) | Very strong  (-0.88) |
| **Scenario 13 and 17: Addressing social inequalities and poverty** | | | | | |
| **Component 1** | **Component 2** | **Baseline**  **(weight1)** | **Low intensity**  **(weight1)** | **Medium intensity**  **(weight1)** | **High intensity**  **(weight1)** |
| Population vulnerabilities | Nutritional quality of diet | Medium  (-0.5) | Medium-weak  (-0.38) | Weak  (-0.25) | Very weak  (-0.13) |
| Population vulnerabilities | Illness in humans | Medium (0.5) | Medium-weak (0.38) | Weak  (0.25) | Very weak (0.13) |
| Population vulnerabilities | Chronic and non-communicable illness in humans | Medium (0.5) | Medium-weak (0.38) | Weak  (0.25) | Very weak (0.13) |
| Population vulnerabilities | Psychological illness in humans | Medium (0.5) | Medium-weak (0.38) | Weak  (0.25) | Very weak (0.13) |
| Population vulnerabilities | Access to healthcare | Weak  (-0.25) | Very weak  (-0.13) | No relationship  (0) | Very weak (0.13) |

1The weight of the relationships represents the level of the correlation between the different drivers (components) of antimicrobial resistance in the Swedish One Health system context exist (from component 1 to component 2). The weights can take on a value between [-1,1] and was divided into 16 categories to represent the different levels: none (0), very low (+/-0.13), low (+/-0.25), medium-low (+/-0.38), medium (+/-0.5), medium-high (+/-0.63), high (+/-0.75), very high (+/-0.88) in which negative values represent a negative correlation. The initial weights (baseline scenario) were informed by expert opinion and a literature review. The weights were increased or decreased to reflect the intervention by three levels to reflect the three intensities of the intervention (low, medium, and high intensity).

**Table S4:** The weights1 of the relationships (from component 1 to component 2) that were altered (set to their lowest possible weight and highest possible weight) in a fuzzy cognitive map of the emergence and transmission of antimicrobial resistance in a Swedish One Health system to determine the sensitivity of components to ten relationships.

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| **Component 1** | **Component 2** | **Initial weight1** | **Lowest weight1** | **Highest weight1** |
| Animal welfare | Antimicrobials use for metaphylactic purposes | Medium (-0.5) | No relationship (0) | Strongest relationship (-1) |
| Animal welfare | Antimicrobials use for preventative purposes | Medium (-0.5) | No relationship (0) | Strongest relationship (-1) |
| Appropriate prescribing | Antimicrobial resistant organisms in humans | Medium (-0.5) | No relationship (0) | Strongest relationship (-1) |
| Appropriate prescribing | Access to antimicrobials outside the system | Medium (0.5) | No relationship (0) | Strongest relationship (1) |
| Antimicrobial resistant organisms in humans | Development of alternatives to antimicrobials | Medium (0.5) | No relationship (0) | Strongest relationship (1) |
| Antimicrobial resistant organisms in humans | Treatment of waste and waste water | Medium (0.5) | No relationship (0) | Strongest relationship (1) |
| Illness in food producing animals | Antimicrobials use for metaphylactic purposes | Medium (0.5) | No relationship (0) | Strongest relationship (1) |
| Illness in food producing animals | Antimicrobials use for preventative purposes | Medium (0.5) | No relationship (0) | Strongest relationship (1) |
| Illness in humans | Antimicrobials use for preventative purposes in humans | Medium (0.5) | No relationship (0) | Strongest relationship (1) |
| Antimicrobial resistant organisms in food producing animals | Antimicrobial resistant organisms in food products | Medium (0.5) | No relationship (0) | Strongest relationship (1) |

1The weight of the relationships represents the level of the correlation between the different drivers (components) of antimicrobial resistance in the Swedish One Health system context exist (from component 1 to component 2). The weights can take on a value between [-1,1] and was divided into 16 categories to represent the different levels: none (0), very low (+/-0.13), low (+/-0.25), medium-low (+/-0.38), medium (+/-0.5), medium-high (+/-0.63), high (+/-0.75), very high (+/-0.88) in which negative values represent a negative correlation. The initial weights were informed by expert opinion and a literature review. The sensitivity analysis changed the weights to the lowest possible value (0) and the highest possible values (+/-1).