

## Supplemental Document

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### Aim and key drivers diagram

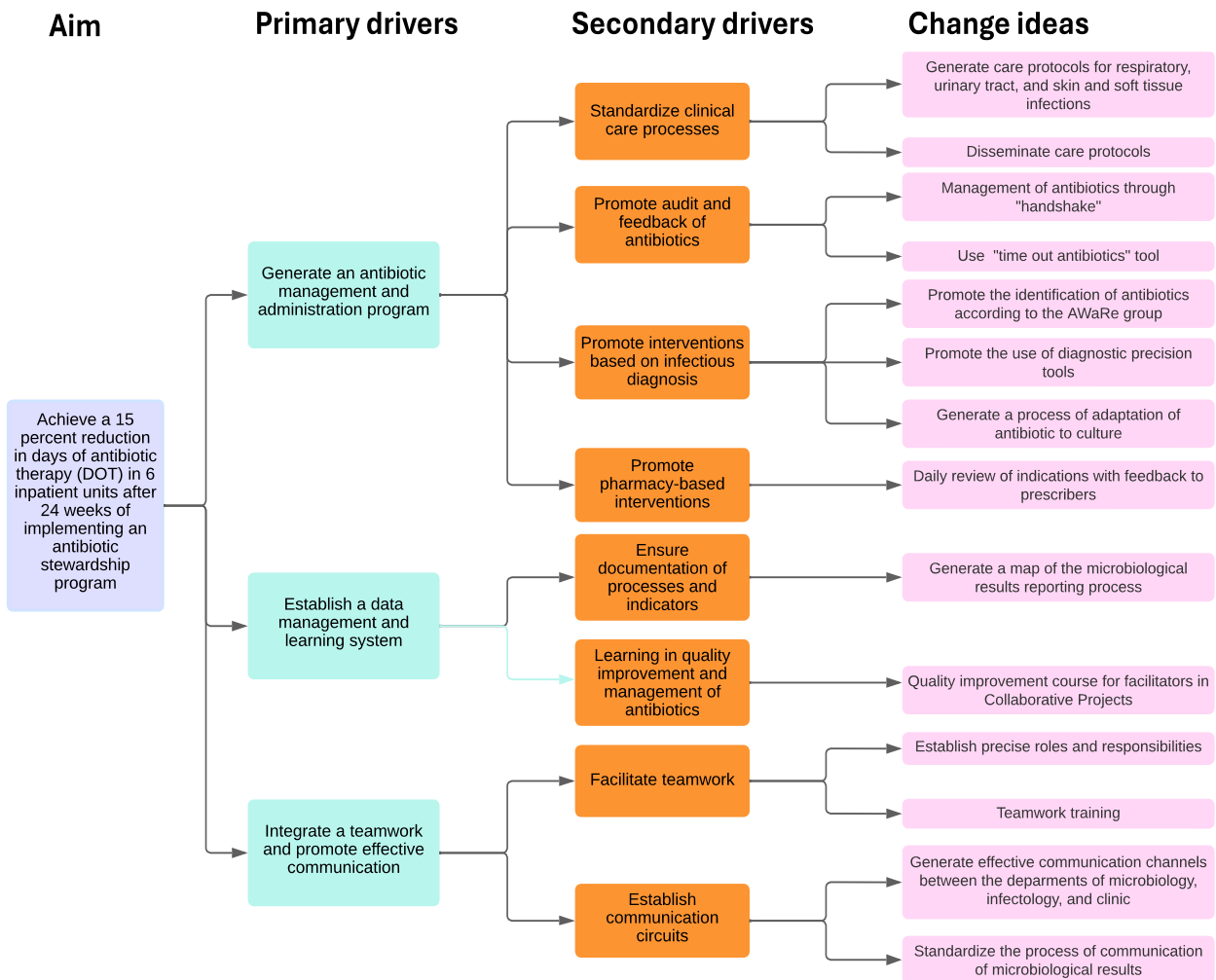


Table S1. Implementation outcomes of stewardship using QI framework.

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<b>Outcomes</b>
Days of antibiotic therapy
Antibiotic consumption in the Access group
Antibiotic consumption in the Watch group
Antibiotic adjustment
De-escalation
Compliance with treatment guidelines
Non-compliance with institutional guidelines
Inappropriate antibiotic
Inappropriate antibiotic dosage*
Inappropriate treatment duration*

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### Description of hospitals

The selected hospitals have a wide influence in areas with a high population density. There were public, pediatric, and academic, with PICU and NICU level 1 (the best possible). They also have specialist training in pediatrics and pediatric subspecialties such as infectious diseases. Both hospitals are associated with scientific societies. Neither of the hospitals had an established ASP.

The General Children's Hospital 'Pedro de Elizalde' is a public hospital located in Barracas, in Buenos Aires, the capital of Argentina. Inaugurated on 7 August 1779, it is the oldest pediatric hospital in the Americas. The professional staff consists of 325 staff physicians, 64 at the management level, 141 resident physicians, and 12 concurrent and fellows. In addition, there are 129 non-medical professionals. The health team comprises 315 people, including nurses, maintenance, and administrative staff. Beds: 244 for general care, neonatal therapy, and pediatrics; 24 intensive care and 24 day hospital beds.

The Dr. Humberto Notti Hospital is the pediatric hospital of reference in western Argentina. It is an exclusively pediatric, highly complex hospital with around 57 specialties such as neurosurgery,

traumatology and orthopedics, cardiovascular surgery, highly complex neonatology, transfer system for high-risk neonates from other centers, infectious diseases, adolescence, care for children at high social risk, dietetics, and nutrition, among others. Thus, with 260 beds available, the hospital has become a center of interest and referral for professionals and healthcare centers in other provinces. In contrast, referrals to different centers in Buenos Aires have begun to decrease.

## Process Evaluation (SOPA / COST) Interview guide

### INTERVIEW GUIDE

#### 1. INTERVIEWEE DATA

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**First I ask you for a brief introduction: what is your training/speciality; your position in the hospital, tasks you perform...**

**What role did you play in the project (SOPA / COST)?**

*Explore tasks and degree of participation, especially facilitators and coordinators.*

#### 2. INVITATION TO PARTICIPATE IN THE STUDY

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**Now I wanted to ask you some questions about the implementation of the intervention in the service. What was the invitation to participate in the study like and what information was initially provided?**

Who provided this information, was this information sufficient or would it have been necessary to have more details about the study?

**Was it clear from the outset what the objective of the study was and what the components of the intervention would be or did this become clearer over time?**

Explore in that process, what information they received, etc.

***For facilitators / coordinators.***

How was it decided that you would participate as facilitator/coordinator of the study?

What specific tasks did this role entail, and how did you communicate with the study team and colleagues in the service?

What training did you receive to fulfil this role, and what would you have added to it?

Which issues do you think you were able to implement that were expected in your role and which were not? What was the reason for this?

#### 3. DEGREE OF IMPLEMENTATION OF THE COMPONENTS

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**What components of the intervention have you been able to implement in the service? Were there any components that were more complex or difficult to implement? Which ones? For what reasons?**

*Inquire about the different components and whether they have been able to maintain them over time, exploring opinions, barriers, specific facilitators for these components.*

- **What was the role of the study facilitators/coordinators in the service?**

Who took on this role and what tasks were they responsible for?

- **Did you receive any training from the team conducting the study or from someone in the service on any aspects of the study? Which ones?**

Do you think that the training provided in the framework of the intervention was useful, and was the modality and timing of the training adequate? Would you change anything?

- **What was the process of developing clinical guidelines on the use of antibiotics like?**  
Who was involved, who coordinated this process, and do you think it was an improvement on the way they had been working, and in what ways?
- **And were improvement cycle encounters implemented in the service during the study?**  
If they were implemented: What were these meetings like, what aspects did they focus on, who coordinated them, and did you think they worked?
- **Another component was collective learning sessions, involving the different centres in which the study was implemented.**  
Did you participate in any of these sessions, what were the dynamics like, did you think they contributed anything, in what ways?

#### **4. OPINION ON THE INTERVENTIONS**

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**And in general terms, how was the team's reception of the study/the interventions proposed by the study, why, and did it change over time?**

Explore acceptance/resistance of the intervention and changes over time (facilitators; workshops; learning sessions).

**How did the intervention impact on the day-to-day work in the service?**

Did it involve new tasks or another distribution?

**Do you think that the proposed interventions were appropriate, did they improve or add something to the work that you usually do in the service, and would you have added or modified any components?**

Explore whether there were any difficulties or barriers to implementing the interventions if you mention that they were already being done.

#### **5. IMPACT OF THE INTERVENTION**

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**At a general level, do you consider that the intervention has had an impact on what aspects? Have any practices or dynamics in the service been modified in order to implement the components?**

*Inquire about changes in daily practice, work routines and dynamics, etc.*

**Did they maintain any of these practices after the intervention ended? Do you think these changes are sustainable over time? What will it depend on?**

#### **6. BARRIERS AND FACILITATORS**

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**To sum up what we have been talking about, what do you think were the main difficulties in implementing the intervention or any of the components?**

**And what made it easier to implement the intervention?**

#### **7. CLOSING**

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**Is there anything you would like to add?**