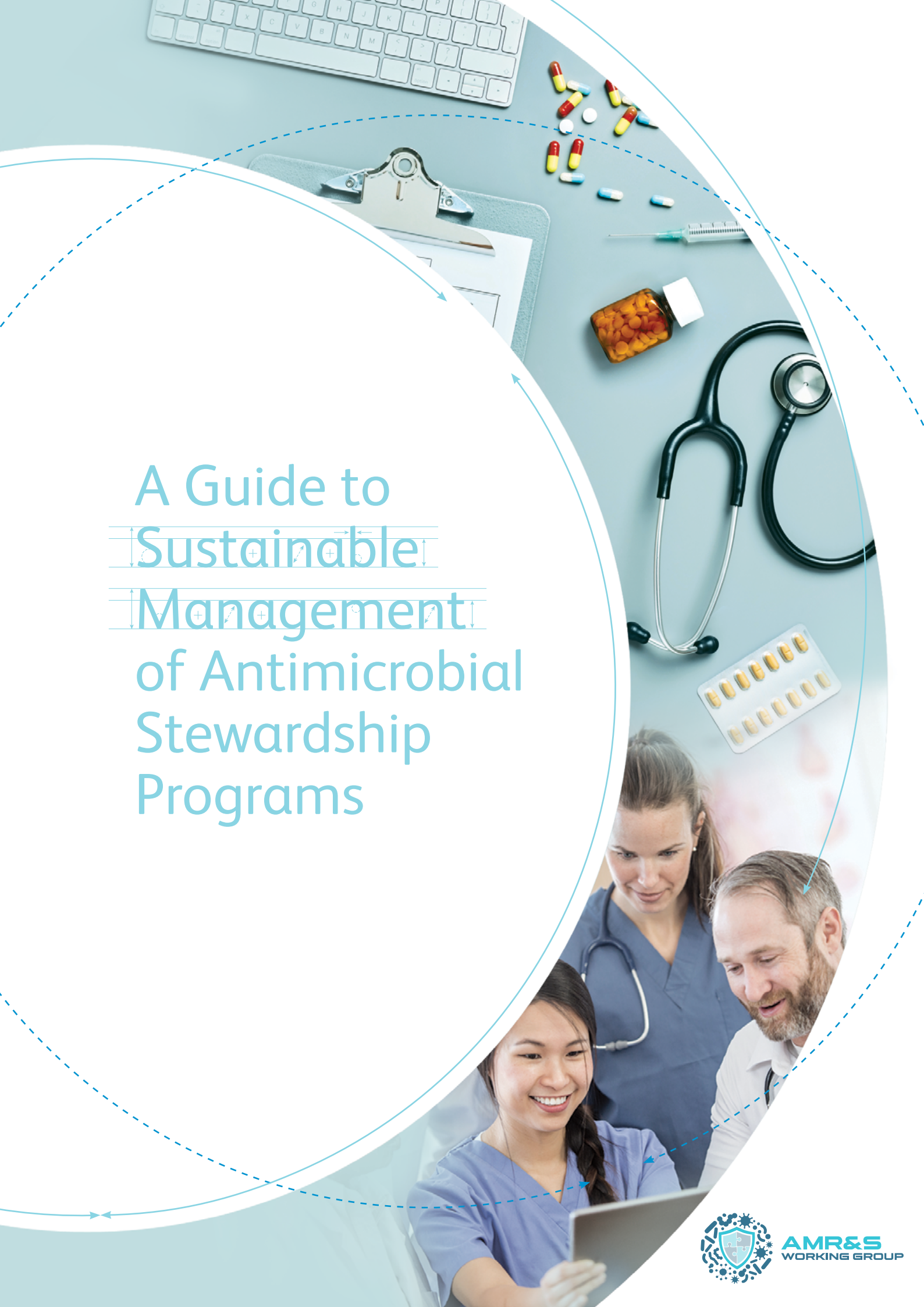

A Guide to Sustainable Management of Antimicrobial Stewardship Programs

AMR&S WORKING GROUP

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How to sustain the AMS program?

Once support from hospital administration has been obtained and the antimicrobial stewardship (AMS) program has been implemented, AMS team leaders are responsible for long-term management of the program, including:

- Monitoring and assessing AMS program performance
- Reporting AMS program performance
- Modifying and adapting the AMS program
- Continuing AMS education

This guide makes recommendations on how to sustain changes in clinical practice in the context of AMS programs.

Monitoring and assessing AMS program performance

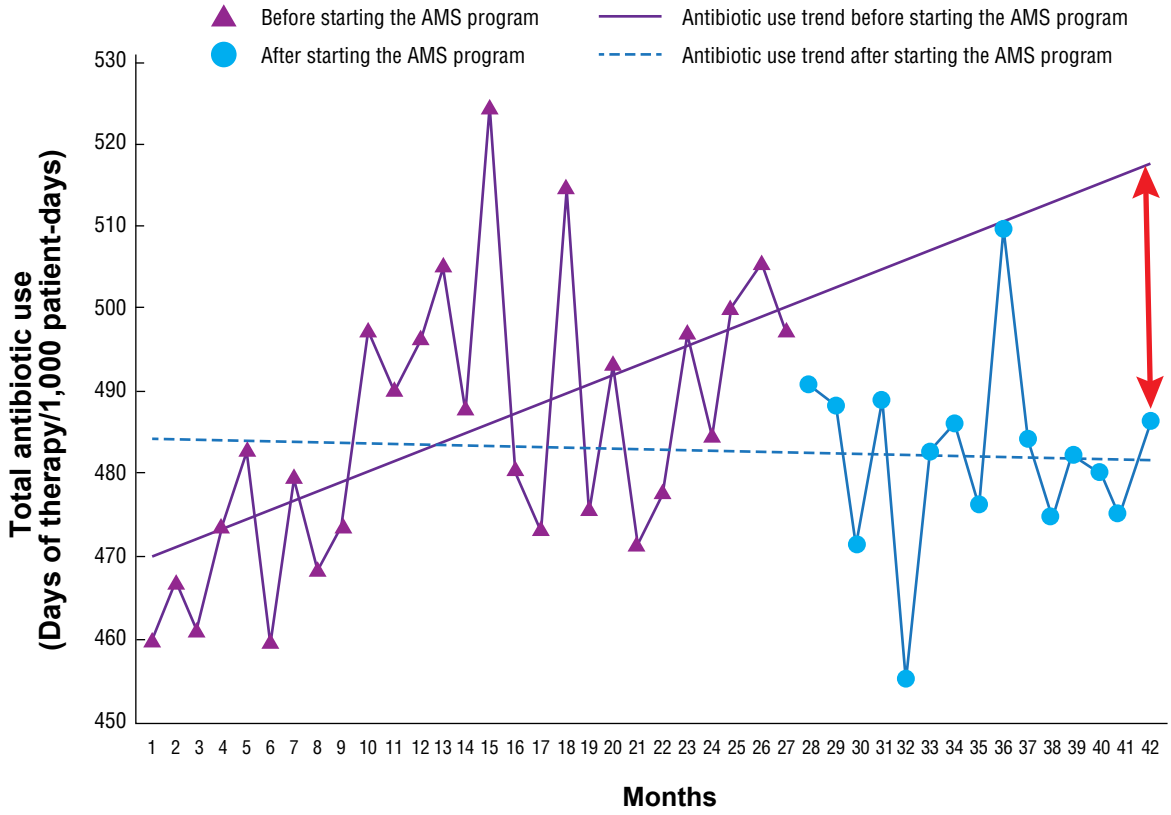
Pre-specified process and outcome measures should be tracked to assess the performance of the AMS program.[1] It is important to graph results over time, and critically analyze the results to determine the level of progress towards program goals.[2,3] See the guide to using **key performance indicators (KPIs) to monitor AMS program progress** in this toolkit for detailed guidance on selecting, calculating and tracking KPIs.

For a sustainable AMS program, long-term trends are as important as initial changes. It is, however, challenging for successful programs to improve on initial successes year after year. There are likely to be diminishing returns after successful implementation of any one particular strategy. By extrapolating historical data, AMS programs can demonstrate a continuing benefit even when measures remain stable or even increase over time. As illustrated in Figure 1, although antibiotic use (days of therapy/1,000 patient-days) at the last measurement point may not be noticeably lower than at the start of the AMS program, it can still be substantially lower than that predicted from baseline data.[3]

This content is independently developed and owned by the members of the Antimicrobial Resistance & Stewardship Working Group. In the dissemination of these materials, the group would like to acknowledge Pfizer's support which was limited to financial assistance only.

Figure 1

Hypothetical changes in antibiotic use after starting an AMS program in a hospital with increasing baseline total antibiotic use[3]



Adapted from Patel D, MacDougall C.

Long-term AMS program performance

- It is not unusual for an initial reduction in antibiotic use and costs to level off a few years after implementation of an AMS program[2,3]
- It needs to be made clear that if the AMS program were discontinued, it is likely that pre-program levels of antibiotic use and costs would re-emerge[2,3]

Reporting AMS program performance

Once a program has been implemented, stakeholders will expect evidence of results to justify their investment and support.[3] A timeline for reporting progress toward AMS program goals should be specified.[1,3] Some outcomes take longer than others to show noticeable changes from baseline, so pre-specified reporting dates for different outcomes can help to clarify expectations.[3]

Early program reports (≤1 year after implementation) should focus on process-related measures to show that the program is well implemented. Examples include the number of recommendations made, proportion of recommendations accepted, use of audited antibiotics, compliance with hospital guidelines, and antibiotic cost savings. These metrics should be included in quarterly and annual reports. Some outcome measures, such as total antibiotic consumption and antimicrobial resistance, may require ≥1 year to show changes from baseline.[3] These metrics should be included in full annual reports and interim reports as deemed appropriate.

Examples of AMS program quarterly and annual reports

- A series of archived AMS program quarterly reports shows how reports evolve as AMS programs move forward from their initial stages (**www.antimicrobialstewardship.com/quarterly-reports**)
- Similarly, a 2016/2017 annual report of an AMS program founded in 2013 (**www.researchid.com/wp-content/uploads/2018/03/phc_asp_annual_report_2017.pdf**) can be compared with an annual report from an AMS program in its 15th year of existence (**https://bynder.uwhealth.org/m/1a2ce2f398f7bc83/original/Antimicrobial-Stewardship-Program-2016-Annual-Report.pdf**)

Modifying and adapting the AMS program

Stay up-to-date with the latest practice guidelines

AMS team members must stay up-to-date with the latest AMS guidelines and treatment guideline recommendations by relevant professional societies.[4] For example, the Infectious Diseases Society of America (IDSA) reviews its **guidelines** every 12 to 18 months after publication to determine whether an update is required, so the AMS team should make sure the hospital's **empiric prescribing guidelines** are updated to reflect any changes in IDSA guidelines. The AMS team must also agree to modify and/or add AMS program strategies as appropriate. For example, the 2016 IDSA/Society for Healthcare Epidemiology of America (SHEA) **AMS implementation guidelines** recommend adding rapid diagnostic testing to conventional culture-guided review if combined with active AMS support and interpretation.[5] The AMS team leader should therefore work with the microbiologist and pharmacist to add rapid diagnostic testing to conventional culture-guided review whenever feasible.

Example of changes to a hospital empiric antibiotic guideline to reflect updated IDSA guidelines

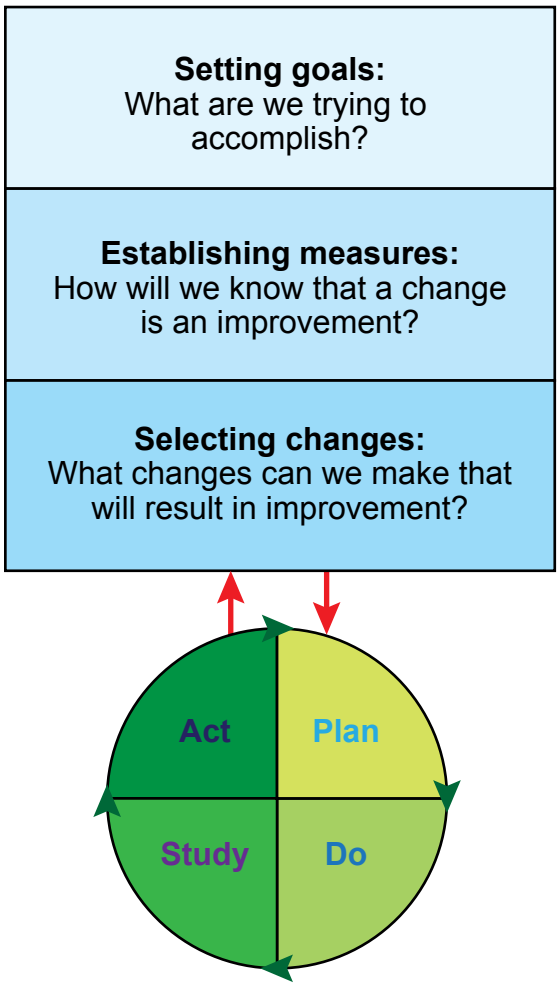
- The IDSA/American Thoracic Society (ATS) **hospital-acquired and ventilator-associated pneumonia guidelines** were updated in 2016
- An AMS program newsletter advising staff of changes in the hospital's empiric antibiotic guidelines to reflect new recommendations in the updated IDSA/ATS guidelines can be found here: **www.wadleyhealth.org/sites/default/files/wadley-antimicrobial-stewardship.pdf**

Plan-Do-Study-Act

The AMS team should test, evaluate and modify interventions using a Plan-Do-Study-Act (PDSA) cycle (Figure 2).[2,6] Regular meetings should be scheduled with the AMS team and clinical staff in areas of the hospital most affected by the AMS program to review AMS program interventions and KPI data, and to make changes to the program as required.[3,6] This should allow any unforeseen problems to be resolved and facilitate prescriber buy-in.

Figure 2

Model for improvement incorporating the PDSA cycle[7]



Adapted from the Institute for Healthcare Improvement.

Start small and build capacity

Starting small and building capacity as resources and acceptance increase is often more sustainable than attempting to launch a comprehensive program from the start.[2,3] Start the program in areas where you anticipate achieving short-term success, such as areas of high antibiotic consumption, high resistance rates and wards/units with clinical staff that are most receptive to AMS program activities. Once success has been demonstrated, plan to expand. For example, add more antibiotics to a prospective audit and feedback intervention after success has been demonstrated with one or two targeted agents, and/or expand the program to include new wards after success has been demonstrated in one or two areas.

Use successes to obtain more resources to address more problem areas and demonstrate the importance of the AMS program, or explain why success was not possible and request help to provide solutions and overcome barriers.[3] If progress towards specified goals is slow but steady, a reassessment of the timeline for achieving the goal may be all that is required.[3]

Continuing education

AMS programs should provide ongoing training and departmental feedback sessions that emphasize the purpose and evidence-based importance of AMS, as well as positive outcomes that are occurring in association with the hospital AMS program.[3,6] Education on AMS and details of the hospital AMS program should be routinely provided as part of orientation for new staff, with regular updates to keep all staff informed about any changes to the **antibiogram** and/or AMS program procedures.[3,6]

Passive educational activities do not have a sustained effect on prescribing behavior and should only be used to complement other AMS activities (eg, an education program in combination with audit/feedback).[5] For example, an education program in combination with an audit-feedback program is an example of a sustainable AMS program that could be applied to many Asian hospitals and is well-suited to Asian bedside prescribing culture.[8-11]

Summary: The foundations of a sustainable AMS program

Successful and sustainable AMS programs often:

- Start small and progressively build capacity
- Have initial reductions in KPIs, which then stabilize over time
- Use educational strategies to complement and reinforce the importance of other AMS activities

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