

Maximising the Electronic Health Record through Digital Innovation to support Antimicrobial Stewardship

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Background

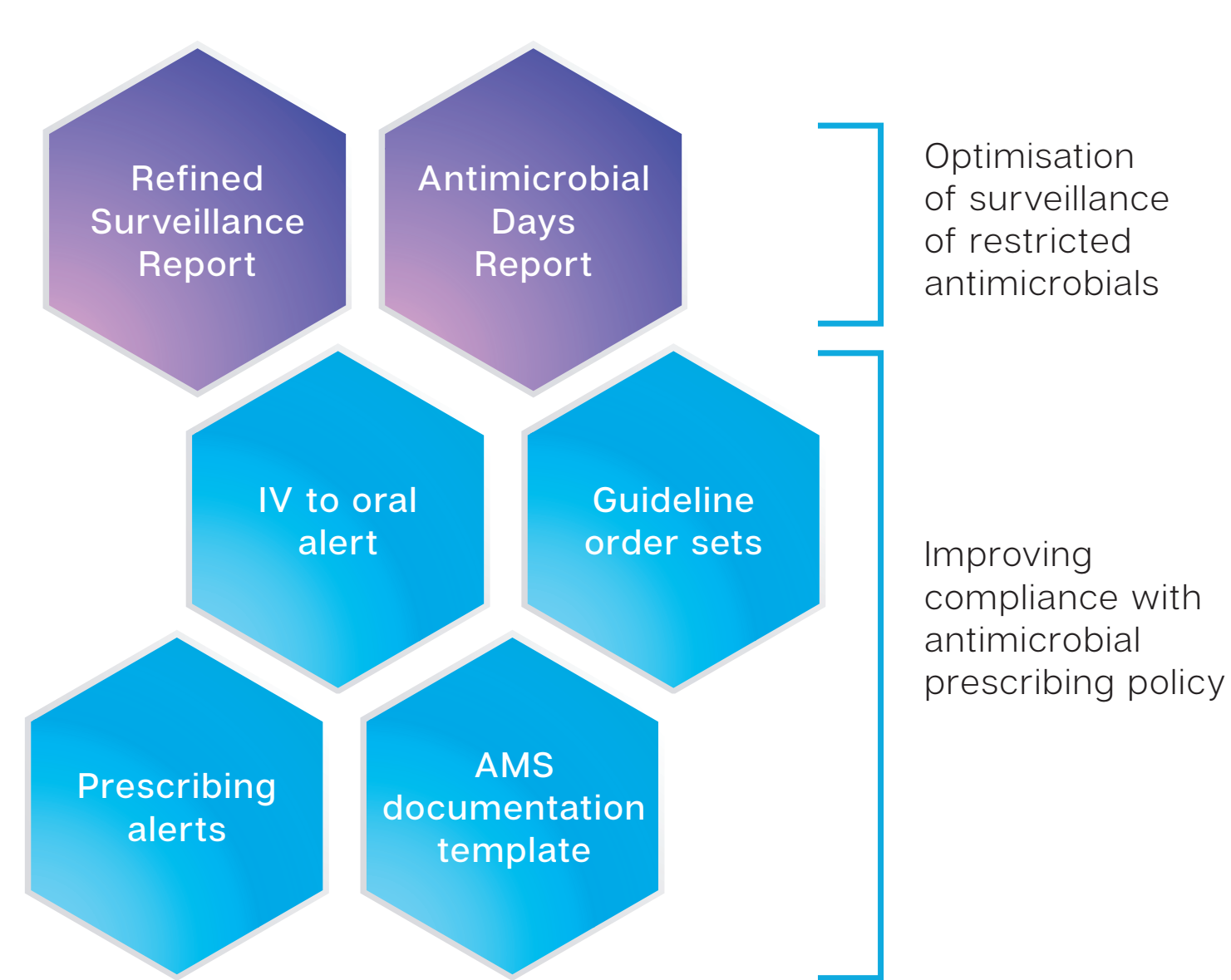
Digital Innovations

Novel digital enhancements to the Cerner® Electronic Health Record (EHR) provided quality improvement in the efficiency of the Antimicrobial Stewardship (AMS) Rounds and a surprising behavioural change in prescribers.

Early innovation (2013)

- Prototype surveillance report for restricted antimicrobials.
- The stand-alone electronic antimicrobial approval system (EAAS) was abandoned.
- Approval process for prescribing restricted antibiotics was streamlined within the EHR = **No more approval codes!**

Digital innovations post 2013 to present day



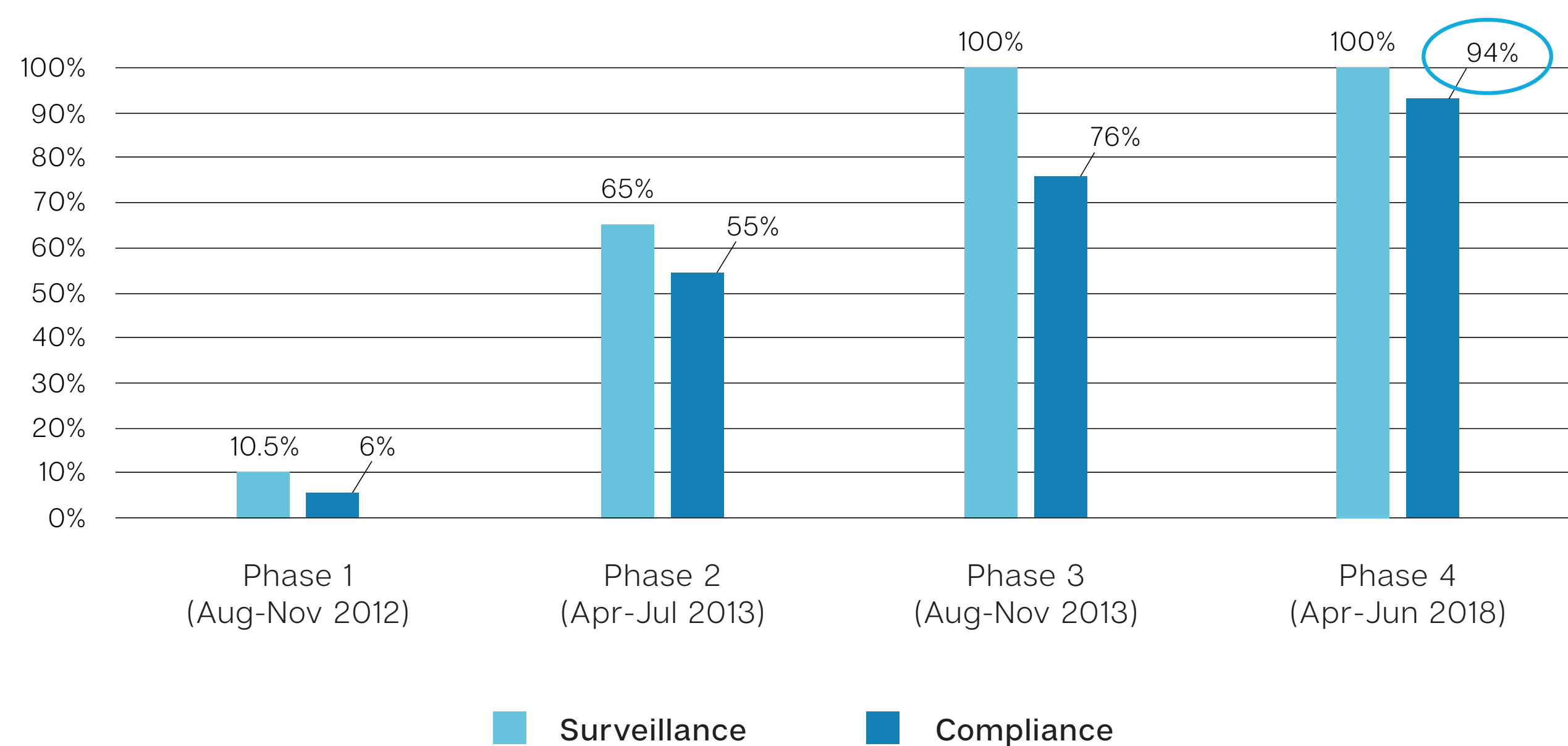
- Description of digital innovations.
- **Refined surveillance report** - captures indication for antimicrobial use.
- **Antibiotic Days Report** - measures administration of antimicrobial agents to the patient.
- **IV to oral alert** - prompts review for early IV to oral switch after 72 hours IV therapy.
- **Guideline order sets** - predefined antimicrobial order sets in line with local guidelines
- **Prescribing alerts** - mandate the approval process for prescribing restricted antimicrobials
- **AMS documentation template** - standardises documentation of AMS interventions

Method

- A longitudinal study was conducted to assess sustainability of the early innovation and impact of the newer suite of digital enhancements on AMS outcomes.
- Validation of the digital system enhancements against the five essential strategies for AMS (Australian guidelines, 2018).

Results

Fig.1: Antimicrobial Surveillance and Compliance with Policy

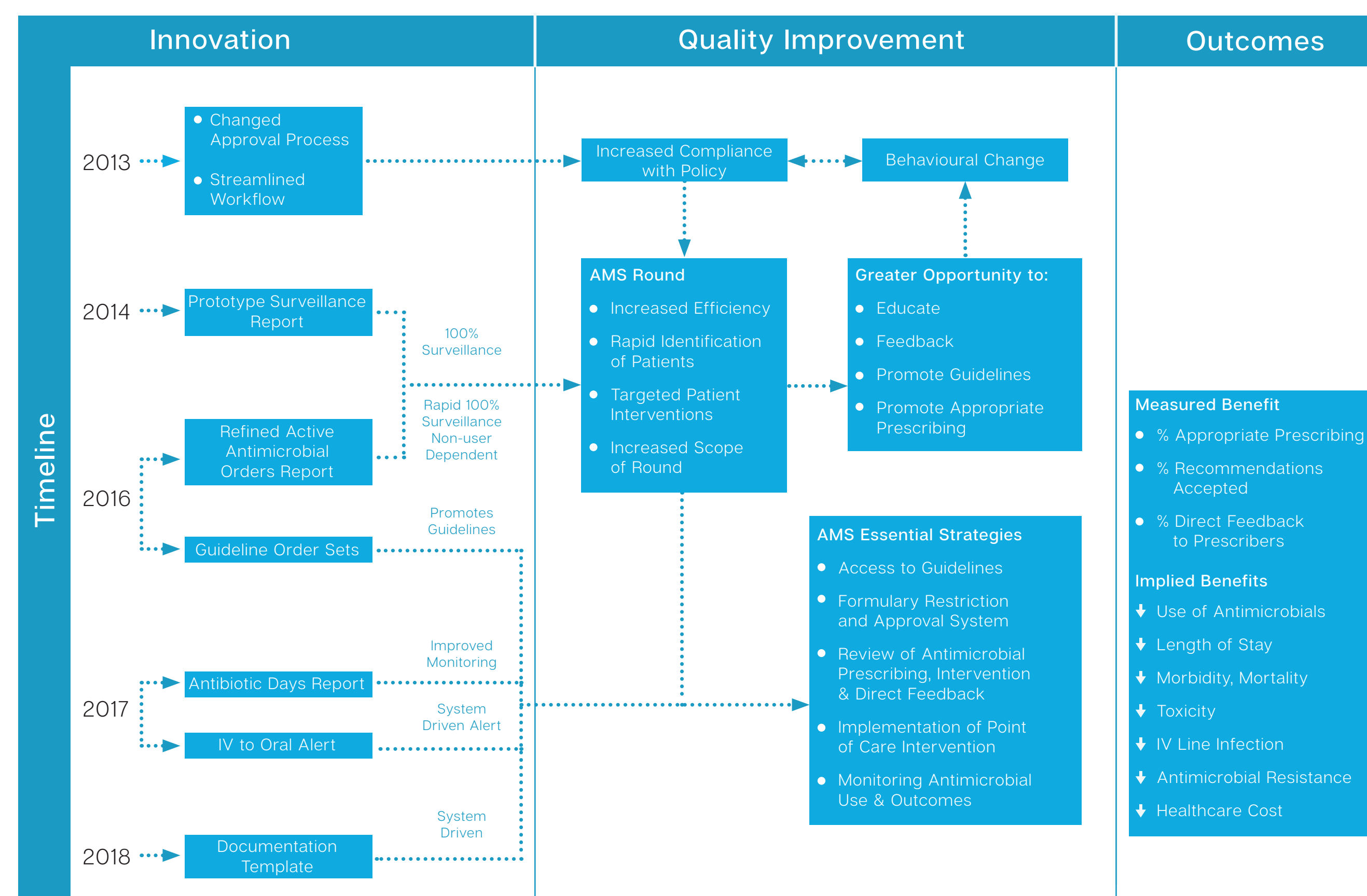


Phase 1: EAAS + paper chart; Phase 2: EAAS + Cerner®; Phase 3 and 4: Cerner® alone

- Surveillance of restricted antibiotics maintained at 100%.
- Compliance with prescribing policy - improved to 94% (n=200), and 91% (n=4883) when extrapolated to all wards.
- Each digital enhancement provided quality improvement in each of the five essential AMS strategies.

Results (continued)

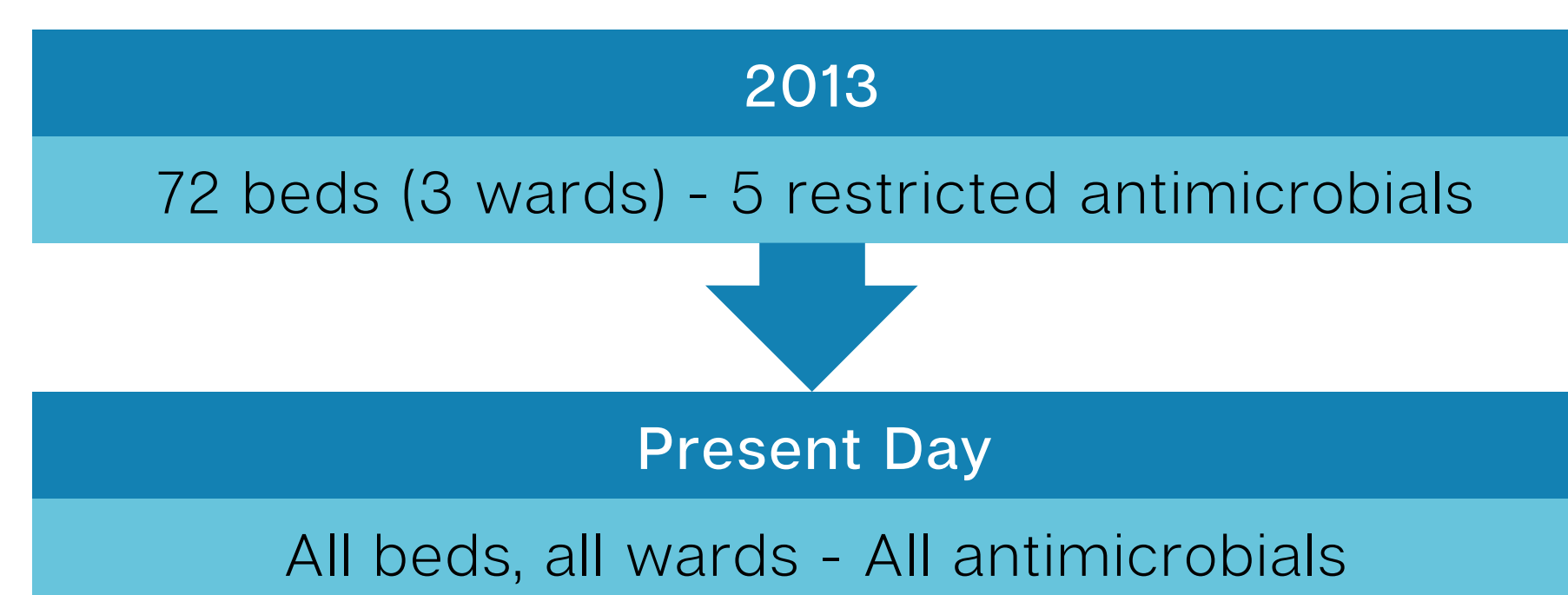
AMS Innovations and Associated Quality Improvements & Outcomes



Discussion

- Increased efficiency from rapid surveillance - more time for value-adding tasks, e.g. direct feedback to doctors, promoting guidelines etc.
- Indication captured in surveillance report enables targeted stewardship intervention.
- IV to oral alert provides a sustainable prompt, independent of AMS review.
- Antibiotic Days Report provides a more accurate measure of antimicrobial consumption than pharmacy drug distribution data.
- Increased compliance with policy suggests a **behavioural change** amongst prescribers, possibly attributable to simpler workflow and increased exposure to the AMS Team.
- Increased efficiency has enabled expansion of the scope of the AMS rounds.

Increase in scope of the AMS Rounds (4 hour per round)



- As a surrogate measure of efficacy, the PH AMS program compares favourably with comparator hospitals in the National Antimicrobial Prescribing Survey, 2017.
 - Higher compliance with guidelines (89.8% vs 69.5%).
 - Lower inappropriate prescribing (11.4% vs 24.7%)
 - Higher documentation of indication (88.6% vs 77.8%).
- Where to next? Development of the surveillance report to permit retrospective drug review.