

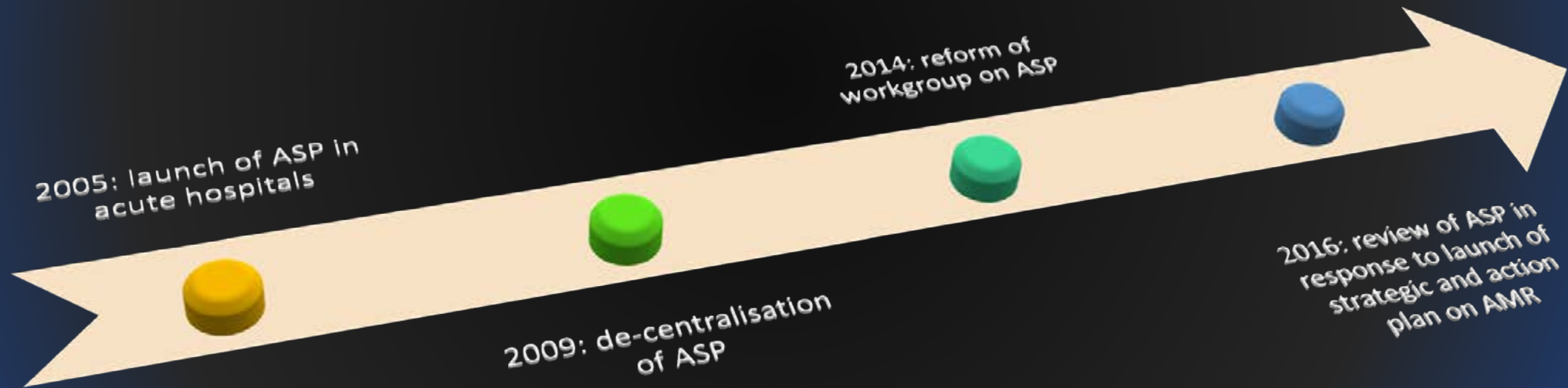
Antibiotic Stewardship Programme (ASP) in hospitals: current practice and challenges

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Regional Symposium on AMR

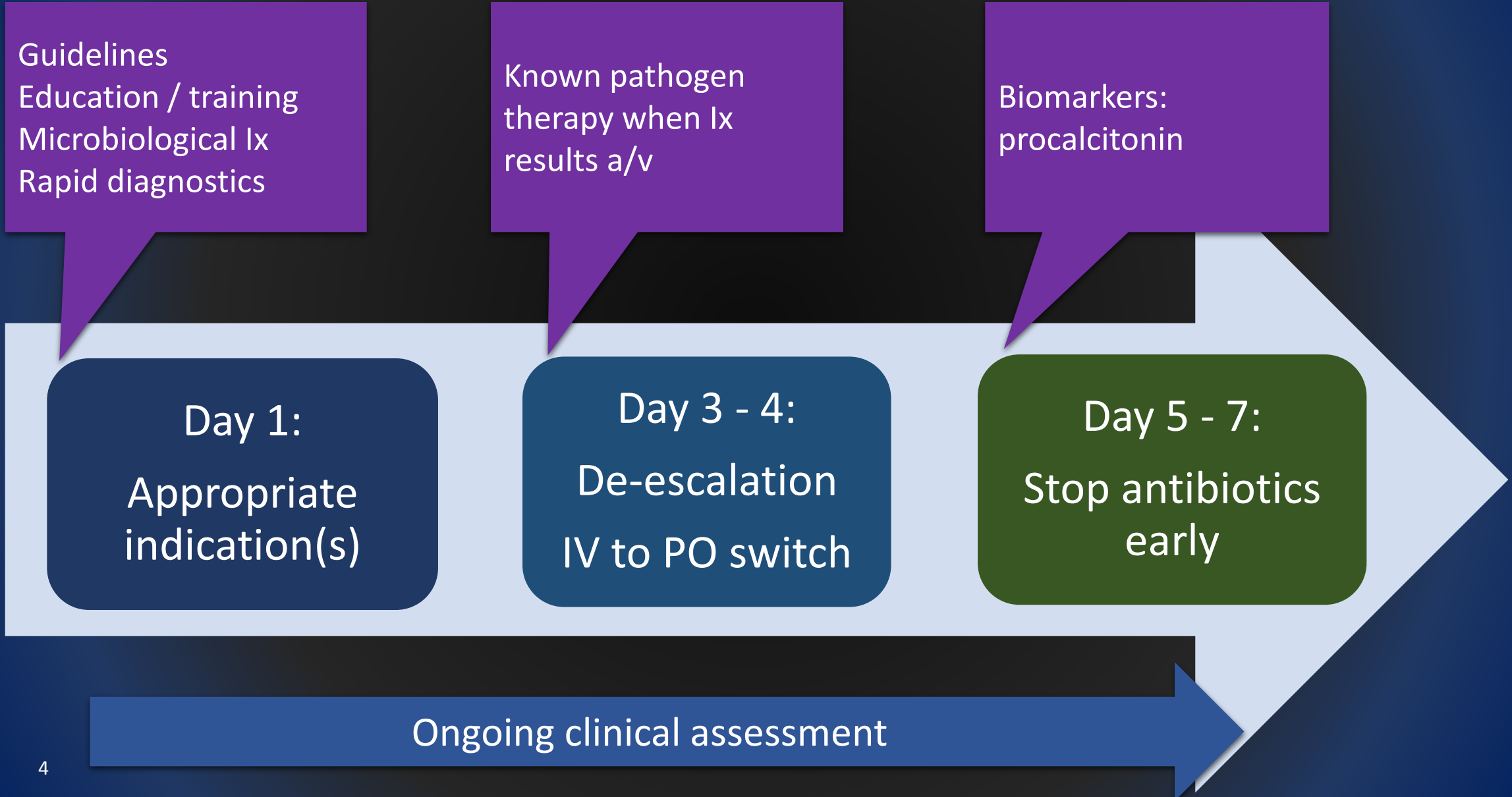
13 November 2018

Chronicle

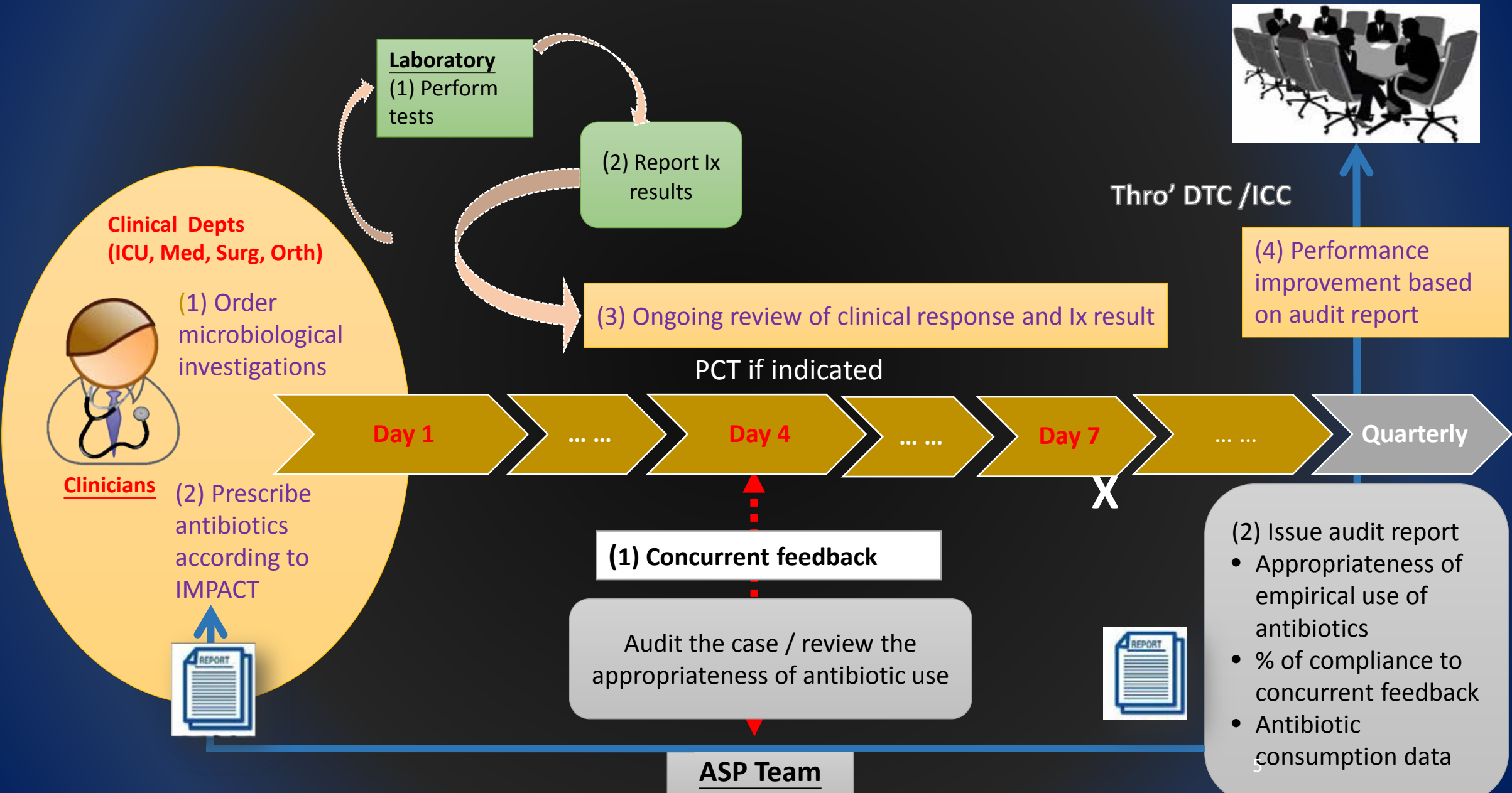


What and how we are doing now

Opportunities for ASP interventions








Current Service Model for ASP



Targeted antimicrobials for interventions

- Imipenem/ meropenem, piperacillin-tazobactam (surrogate markers for “big gun” antimicrobials; represents > 70% of consumption): review +/- concurrent feedback as appropriate
- ASP team to review all “last resort” antimicrobials prescriptions (e.g. colistin)
- Workgroup on ASP to give recommendations on indications of new and reserved antimicrobials for multi-drug resistant organisms

Acute DDD/1000 acute BDO – By Group

Group	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018Q1	2018Q2	2018Q3	08 vs. baseline	18Q3 vs. 08	Trend 05 to 08	Trend 08 to 18Q3	18Q3 vs. baseline
Group 1 - Big Gun	38.95	37.43	37.52	36.00	41.52	38.41	38.56	46.89	56.90	67.31	80.96	87.53	93.74	99.72	98.00	103.2	-8%	187%			165%
IV FQ	10.35	9.36	8.61	7.59	8.25	8.01	6.97	7.76	7.63	9.16	9.50	9.59	9.31	8.25	9.57	10.25	-27%	35%			-1%
Group 2	17.19	18.16	22.06	23.53	25.15	32.02	32.04	33.52	33.16	32.24	28.24	30.35	30.17	32.06	28.47	29.92	37%	27%			74%
Group 3	7.05	7.51	7.66	7.29	8.35	8.95	10.33	10.78	12.05	13.51	15.03	16.22	16.95	16.91	17.59	18.77	3%	157%			166%
All antibiotics	740.0	738.8	766.3	770.0	794.4	841.5	814.6	850.1	856.7	874.3	890.0	904.4	899.9	950.7	888.5	903.4	4%	17%			22%

Group 1

Cefepime
 Ceftazidime
 Meropenem
 Tazocin
 Cefoperazone-sulbactam
 Imipenem

Group 2

Ticarcillin-clavulanate
 Piperacillin
 Cefotaxime
 Ceftriaxone

Group 3

Vancomycin
 Linezolid

Linezolid, Colistin, Ertapenem, Tigecycline, Daptomycin, Ceftaroline: acute DDD/1000 acute BDO

Group	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018Q1	2018Q2	2018Q3	08 vs. baseline	18Q3 vs. 08	Trend 05 to 08	Trend 08 to 18Q3	18Q3 vs. baseline
Linezolid	0.47	0.50	0.41	0.32	0.68	0.66	0.78	1.03	1.23	1.65	1.53	1.51	1.58	1.89	1.61	1.39	-32%	335%			196%
Colistin	0.07	0.05	0.03	0.12	0.40	0.55	0.60	1.01	1.69	2.90	2.84	2.28	2.10	1.89	1.78	1.76	71%	1364%			2409%
Ertapenem	0.00	0.15	0.62	0.90	1.80	3.14	3.47	4.23	4.59	4.48	4.47	4.72	4.76	5.01	5.52	5.86	-	551%			-
Tigecycline	0.00	0.03	0.13	0.24	0.31	0.21	0.21	0.20	0.30	0.33	0.42	0.43	0.44	0.37	0.48	0.45	-	88%			-
Daptomycin	0.00	0.00	0.00	0.03	0.07	0.14	0.18	0.40	0.53	0.58	0.87	1.05	1.38	1.38	1.30	1.26	-	4114%			-
Ceftaroline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.42	0.42	0.30	-	-			-
All antibiotics	740.0	738.8	766.3	770.0	794.4	841.5	814.6	850.1	856.7	874.3	890.0	904.4	899.9	950.7	888.5	903.4	4%	17%			22%

Outcome markers

1. Antibiotic consumption data
 - DDD per 1000 acute patient bed days
2. Percentage of appropriate use of empirical antibiotics
3. Percentage of compliance to concurrent feedback

Key points for prescribers

1. Appropriate clinical specimens for microbiological investigations before starting Rx
2. Choice & dose according to guidelines
3. Oral/ step-down Rx
4. Limit Rx duration

Gaps and challenges

ASP Team

- Increasing diversity, complexity and volume of workload
- Growth of workforce not matched with service demand

Limited resource for implementation of ASP

Impact on sustainability of ASP

Budget holders

- Shortage in manpower (doctors, nurses,...)
- Other competing interests within healthcare sectors
- Effects of ASP not directly tangible

Implication on resource allocation

Frontline doctors

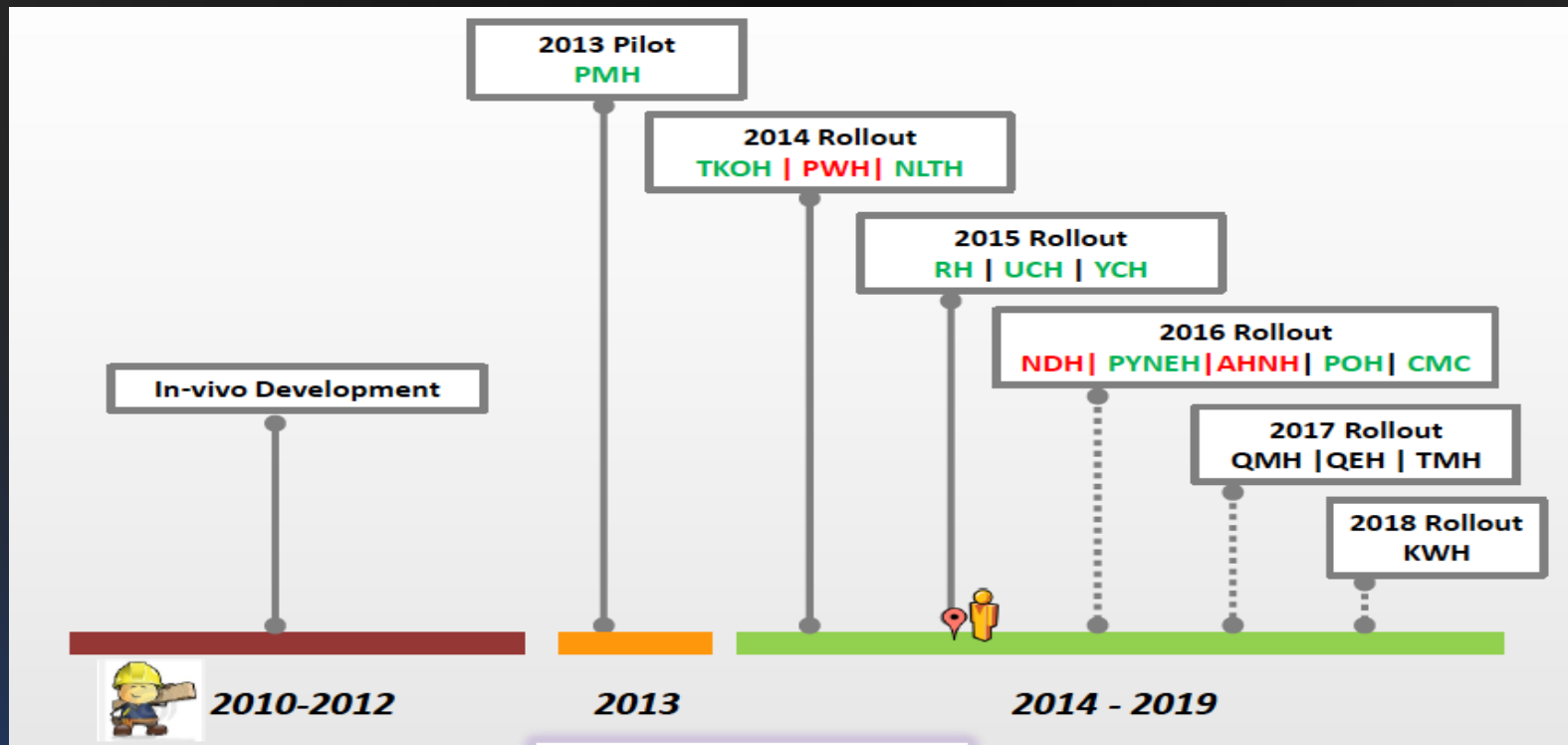
- Aging population, multiple co-morbid and chronic illnesses, expanding population of immunocompromised patients
- Prevalence of MDRO on the rise

Pressing need of broad spectrum antimicrobials for treatment (both empirical and pathogen specific)

Looking forward: application of information
technology

In-patient medication order entry (IPMOE)

- A function of the Clinical Management System (CMS)
- An electronic platform for prescription of drugs for in-patients
- Enrolled in phases to all HA hospitals



Assist with dosing & Using common orders and standard regimen

The screenshot displays the Clinical Management System (CMS) interface for Patient 712. The patient data section shows: PATIENT, 712, F, 20y, DOB: 18-Dec-1993, I000712(3), MED, DC02-03, Adm: 20-Dec-2013, HN13000512(Z). The drug name is GANCICLOVIR, and the regimen is Parenteral Injection(Sodium) intermittent IV infusion. The loading dose is 5 MG/KG in 100ML NS over 1 hour Q12H, and the maintenance dose is 5 MG/KG in 100ML NS over 1 hour Q24. The drug sets section lists various regimens, including M&G-RENAL:PDF (BAXTER)_SPIKE STD CA, M&G-RENAL:PDF (FRESENIUS) STAYSAFE, M&G-RENAL:PERITONITIS PROTOCOL BW<50KG, M&G-RENAL:PERITONITIS PROTOCOL BW>50KG, M&G-RENAL:PRE-OP PD CATH. INSERTION, M&G-RHEUMAT:MP FOR ARTHRITIS, Morphine PCA, NEW DRUG SET, NTEC D10%KI INFUSION REGIMEN, and Cefazolin Sodium - injection (DOSE 1 g - PDF bag - daily PER 2 L BAG) and Gentamicin Sulphate - injection - 40mg/ml - 2 mL (DOSE 40 mg - PDF bag - daily PER 2 L BAG). A red box highlights the 'Drug Sets / Standard Regimen' section, which lists various drug sets and their corresponding dosages and frequencies. A red box also highlights the 'Details' section, which shows the dosing and frequency for Cefazolin Sodium - injection and Gentamicin Sulphate - injection.

Drug Sets / Standard Regimen

Drug Set	Dose	Frequency
M&G-RENAL:PDF (BAXTER)_SPIKE STD CA		
M&G-RENAL:PDF (FRESENIUS) STAYSAFE		
M&G-RENAL:PERITONITIS PROTOCOL BW<50KG		
M&G-RENAL:PERITONITIS PROTOCOL BW>50KG		
M&G-RENAL:PRE-OP PD CATH. INSERTION		
M&G-RHEUMAT:MP FOR ARTHRITIS		
Morphine PCA		
NEW DRUG SET		
NTEC D10%KI INFUSION REGIMEN		
Cefazolin Sodium - injection	DOSE 1 g - PDF bag - daily	PER 2 L BAG
Gentamicin Sulphate - injection - 40mg/ml - 2 mL	DOSE 40 mg - PDF bag - daily	PER 2 L BAG

Stop order reminders or flags – Drug Review

The screenshot shows the 'Clinical Management System (CMS)' interface. At the top, there is a menu bar with options like 'File', 'Clinical Investigation', 'Enquiry', 'Booking', 'DT Report', 'Doc. Print', 'Other System', 'Info', and 'Admin'. Below the menu is a toolbar with various icons. The main area displays patient information for 'PATIENT, 712' (F, 20y, DOB: 18-Dec-1993, Adm: 20-Dec-2013). A 'Review Item' pop-up window is open, showing details for 'Ciprofloxacin Lactate - infusion'. The window includes a 'Drug Information' section with the drug name and dose, a 'Message from Pharmacy' section with a note to consider an IV-to-oral switch, and an 'Action' section with three buttons: 'Continue Medication', 'End Medication', and 'Review Later'. The background shows a list of other medications with their respective doses and frequencies.

Review Item

Drug Information

Ciprofloxacin Lactate – infusion
DOSE 400 mg – intermittent IV infusion – over 60 Minutes – Q12H

Message from Pharmacy
Please consider IV - to - Oral switch

Start Date: 28/10/2014
Review Date: 29/10/2014
End Date:
Next Review Date: 28/11/2014

Action

Continue Medication

End Medication

Review Later

Possible future development of IPMOE

- Standard list of indications for targeted antimicrobials
- Tracking of antibiotic prescription history
- Link to guidelines
- Dose calculators

Our long term goal:
decision support system on
antimicrobial prescribing