

What's the Formula for Successful Antibiotic Guidelines?



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Methods

- Questionnaire derived from;
 - * HARMONY antibiotic policy tool
 - * BSAC questionnaire
 - * ARPAC Antibiotic policy sub group



General Non ICU Policy Issues (170 Hospitals)

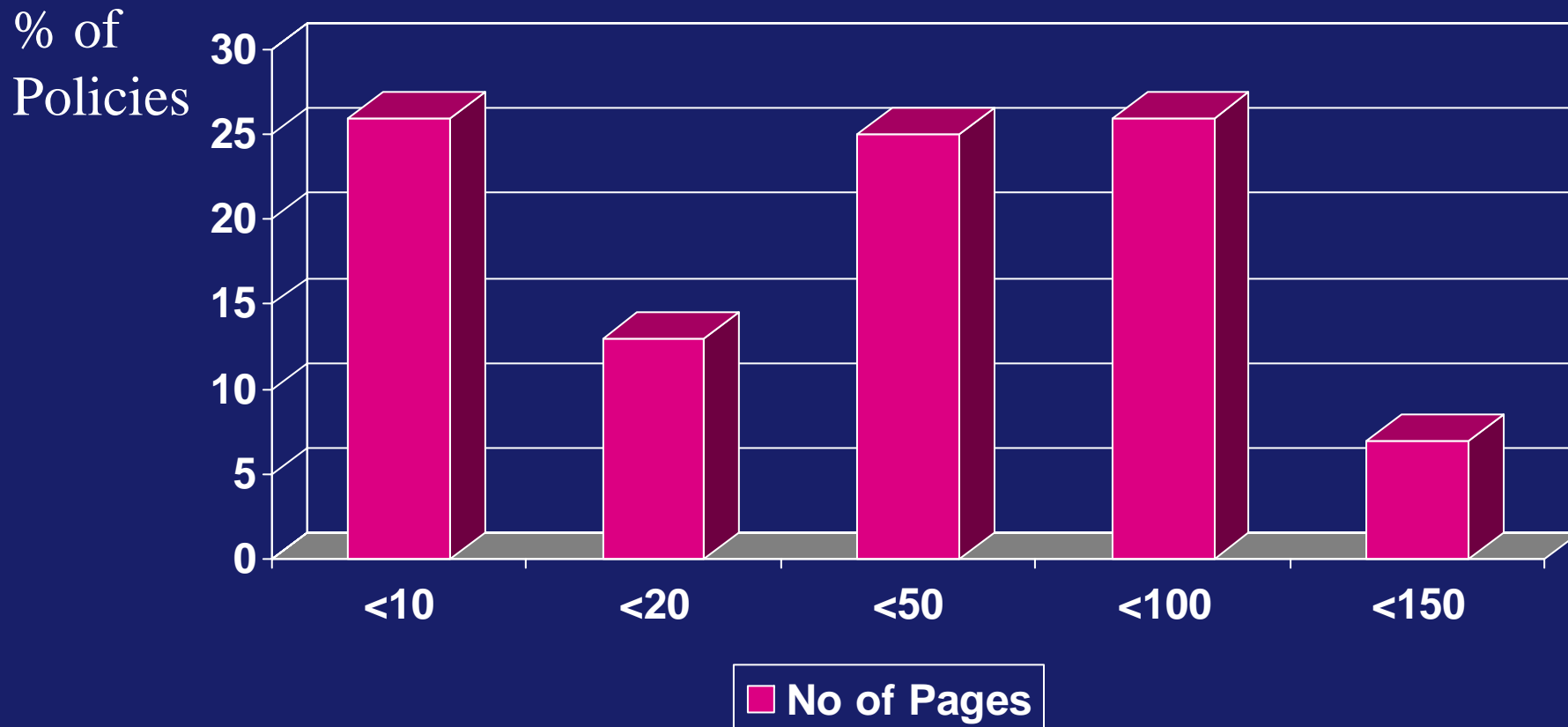
- Policy 59% (165 Hospitals)
- Policy drawn up by:
 - * CMM/ID Physician 37% (166)
 - * Antibiotic Committee 30% (166)
 - * Drugs Therapeutics Com. 18% (166)
 - * Pharmacy 16% (166)
 - * National Committee 10% (166)



General Non ICU Policy Issues (170 Hospitals)

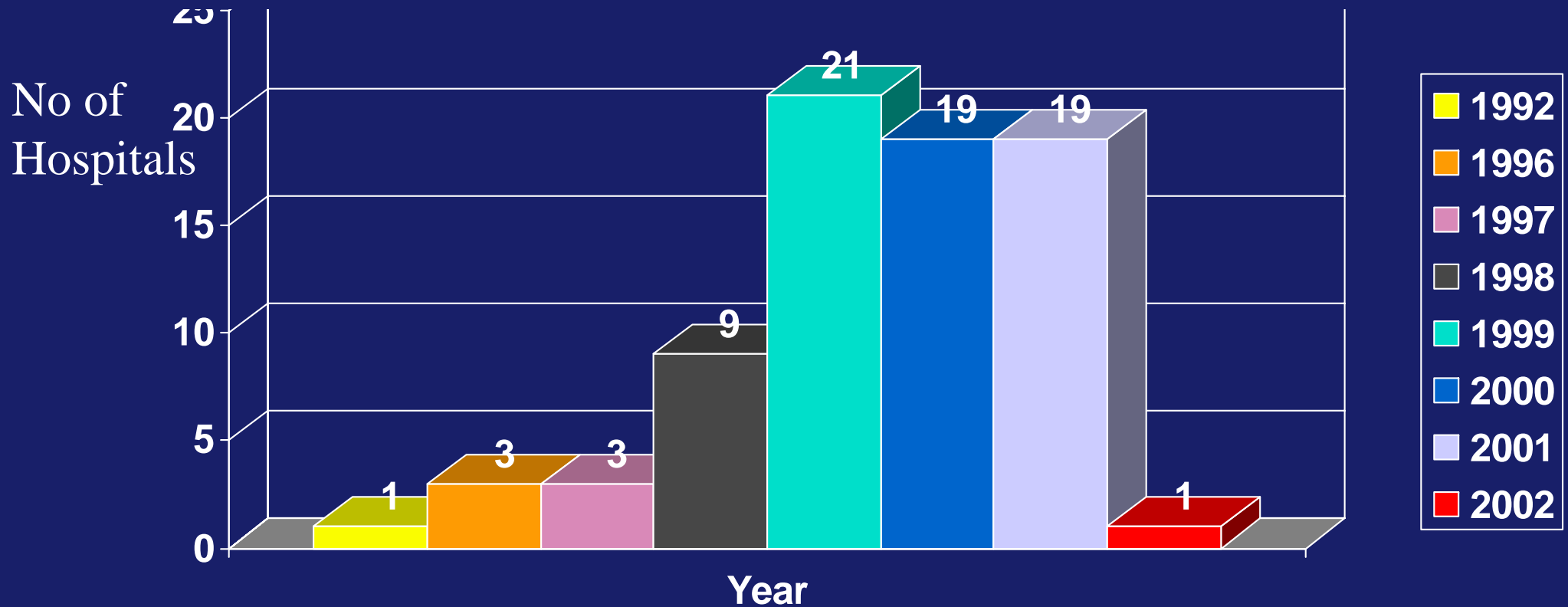
- | Portable 60% (109)
Fits into a doctor's white coat pocket
- | Revision date 47% (105)
- | Indexed 52% (100)

No of Pages in Policies



Indexing was closely related to the size of the policy ($p < .001$)

- Relate to the size of the policy & who involved ?
- 94 did not answer
 - Did they know ?
 - Was it shown ?





General Policy Issues (170 Hospitals)

- | Use local resistance data 57% (107)
- | Emphasise AMR importance 65% (107)
- | Utilisation co-ordinator 35% (113)
- | Computerised monitoring prescriptions 25% (113)
- | Policy on the Intranet 20% (109)
- | Cycling 13% (110)



Empirical Therapy: Non ICU (170 Hospitals)

Empirical	78%	(108)	Dose	86%	(95)
Individual	77%	(93)	Route	91%	(96)
Drug classes	53%	(87)	Duration	71%	(95)
1 st choice	90%	(96)	Bacterial	65%	(96)
2 nd choice	88%	(94)	targets		
Revision	47%	(105)	Side effects	29%	(91)
			Costs	34%	(94)



Surgical Prophylaxis: Whole Hospital (170 Hospitals)

Recommended	81% (119)
Procedures listed	79% (117)
1 st Choice	89% (106)
2 nd Choice	75% (105)
Timing	89% (105)
<2h pre-operation	80% (104)
Single dose	82% (101)
<24h duration	79% (100)
Dosage	85% (105)
Route administration	87% (106)



Surgical Prophylaxis: Whole Hospital (170 Hospitals)

Long operation give 2 nd dose	77% (105)
Microbial targets stated	40% (104)
Side effects	17% (104)
Pre printed forms	24% (115)
Prolonged: warning system	14% (115)



Stop Dates: Non ICU (170 Hospitals)

Prophylaxis:

Voluntary	21% (158)
Compulsory	9% (157)

Treatment:

Voluntary	15% (158)
Compulsory	6% (159)
Computerised	15% (166)



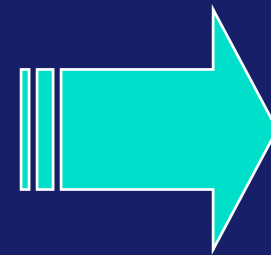
Clinical & Laboratory Aspects: Non ICU

Note sepsis parameters	31% (109)
Note clinical illness	39% (109)
Complex: seek advice	55% (107)
Parenteral/oral switch	67% (108)
Serum levels	54% (108)
Specific Treatments	73% (108)
Specimens taken	71% (108)
How take specimens	44% (108)
Communicate with laboratory	38% (89)
Change following laboratory results	76% (108)

Antibiotic Policy Scores

9 sub-sections:

1. Formularies & restricted lists
2. Other restrictive measures
3. Committees & policies
4. **Guideline content & format**
5. **Guideline implementation**
6. Education (JvM)
7. Audit
8. Laboratories
9. Pharmacy



**Total aggregated
AB Policy Score**

Min

Max

BC covering

Guideline format & content

4 a) Guideline format - maximum score = 2

If ticked, score:

Did your hospital have a written antibiotic policy in 2001?

+1.0

Did your antibiotic policy contain sections which apply to specific units?

+0.1429

Who designed the policy?

- National committee
- Local drugs & therapeutic committee
- Local antibiotic committee
- Local pharmacy
- Local consultant microbiologist / ID physician
- Other - please specify
- Not applicable - no policy

If ≥ 1
options

+0.1429

Max score
= 1.29

continued

Guideline format & content

4a) Guideline format - maximum score = 2

If ticked, score:

+0.1429

Prior to 31st December 2001, on which date was the policy last revised? (If later than Dec. 1999)

+0.1429

In 2001, did the policy fit into the pocket of a doctor's white coat?

+0.1429

Was the policy indexed?

+0.1429

How many pages were in the policy? (If >50)

+0.1429

Was the antibiotic policy posted on the hospital intranet?

Max score
= 0.71

Guideline format & content

5) Guideline content - maximum score = 3

If ticked, score:

+0.0769

Did the policy emphasise avoidance of unnecessary use and risks of resistance?

+0.0769

Did the policy refer to local resistance patterns?

+0.0769

Did the policy emphasise the importance of documenting sepsis parameters?

+0.0769

Did the policy emphasise the importance of documenting the clinical severity of illness?

+0.0769

Did the policy suggest seeking advice in cases of uncertainty and severe / complex infections?

Max score
= 0.38

continued

Guideline format & content

Guideline content - maximum score = 3

If ticked, score:

Did the policy recommend reviewing parenteral therapy and switching to oral therapy? +0.0769

Did the policy give advice on monitoring serum antibiotic levels? +0.0769

Did the policy provide guidance on treatment of proven infections? +0.0769

Did the policy remind the user to submit a specimen to the laboratory? +0.0769

Max score
= 0.31

continued

Guideline format & content

Guideline content - maximum score = 3

If ticked, score:

Did the policy provide guidelines on specimen collection?

+0.0769

Did the policy remind the clinician / nurse of the need to inform the lab. of current antibiotic therapy and any imminent changes to be made to therapy?

+0.0769

Did the policy suggest modifying treatment based on laboratory results?

+0.0769

Did the policy give advice on duration of therapy?

+0.0769

Max score
= 0.31

continued

Guideline format & content

Guideline content - maximum score = 3

If ticked, score:

In 2001 did the policy recommend empiric therapy for specific indications? **+0.0833**

Did the policy on empiric therapy make recommendations on

- Individual drugs
- Drug classes
- First choice of antibiotic
- Alternative choice (eg if patient allergic)
- Dosage
- Route of administration
- Duration of prescription
- Micro-organisms covered by antibiotic listed
- Side effects
- Costs

**Score
+0.0833
for each**

**Max score
= 1.0**

Did it recommend revision of therapy?

+0.0833

continued

Guideline format & content

Guideline content - maximum score = 3

In 2001 did the policy make recommendations for surgical prophylaxis?

If ticked, score:
+0.0714

Did the policy list the surgical procedures where prophylaxis is indicated?

+0.0714

Did the policy on surgical prophylaxis state

- First choice of antibiotic
- Alternative antibiotic choices (eg if patient allergic)
- Timing of antibiotic administration
- The importance of giving the antibiotic within 2 hours before surgery
- Single dose prophylaxis was recommended
- That prophylaxis should last less than 24 hours
- Dosage
- Route of administration
- Repeat dosing for long procedures or excessive blood loss
- Micro-organisms covered by antibiotic listed
- Side effects
- Costs

**Score
+0.0714
for each**

**Max score
= 1.0**

Guideline format & content

6) Guideline implementation - maximum score = 3

If ticked, score:

Did your hospital have computerised antibiotic prescribing?

+1.5

Was there a system to warn if prophylaxis is prolonged?

+0.5

Was there a voluntary system of automatic stop dates for prophylaxis?

+0.5

Was there a voluntary system of automatic stop dates for treatment?

+0.5

Max score
= 3.0

continued

Antibiotic Policy Scoring Guideline (4) Format, (5) Content & (6) Implementation

Median value by Geographical Region

Region	No	Format	Content	Implement
North	19	1.6	2	0
West	55	1.6	1.6	0
South	40	0.72	1.03	0.5
Central East	43	1.14	0.88	0
South East	13	0	0	0

Format and Content were **just** significant $p < 0.05$: Kruskal Wallis test i.e. there is distribution geographically across the scoring range

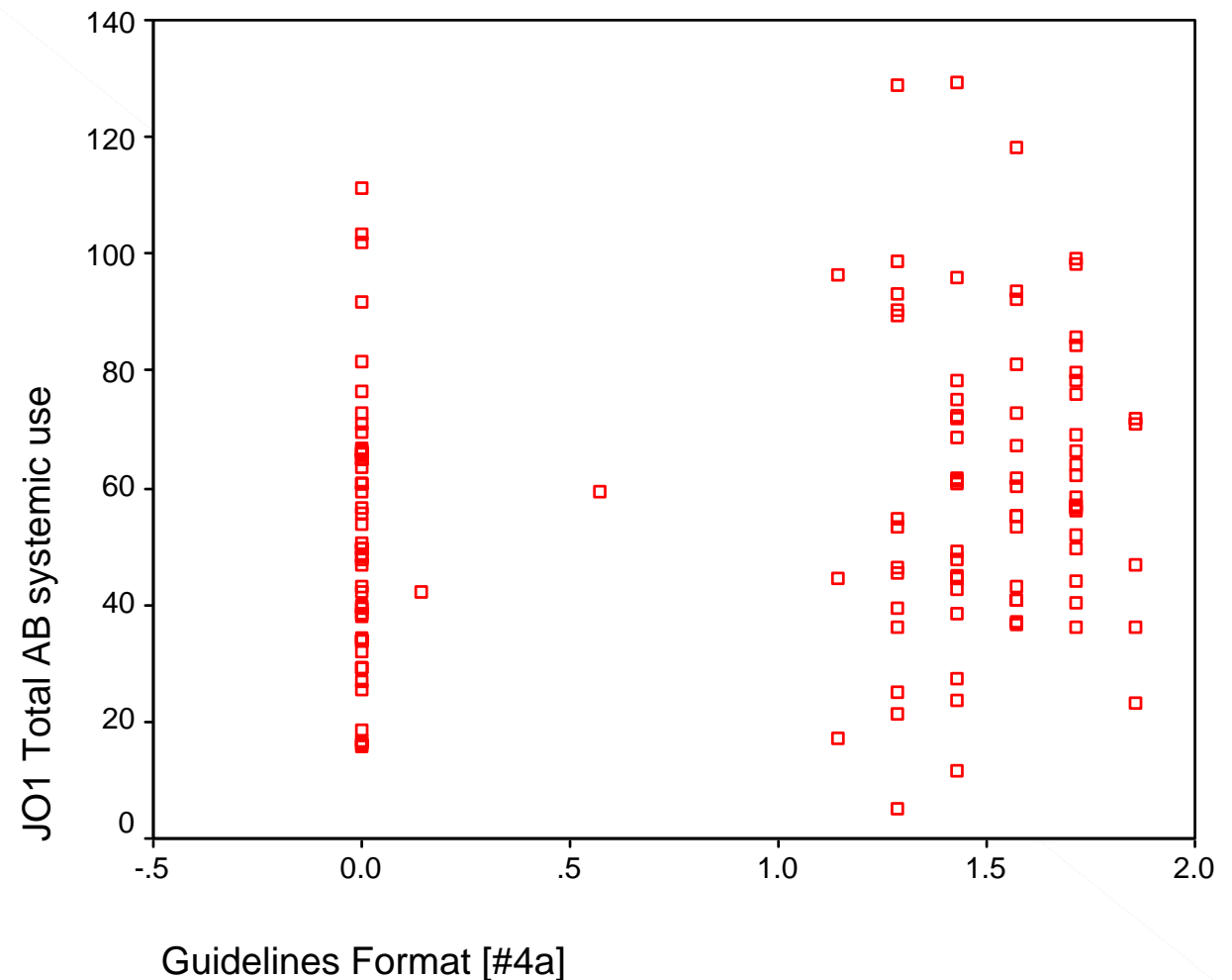
Guideline Format Score (4a) was significantly related to **INCREASED** Total Systemic Use of Antibiotics

Correlations				
			JO1 Total AB systemic use	Guidelines Format [#4a]
Spearman's rho	JO1 Total AB systemic use	Correlation Coefficient	1.000	.184*
		Sig. (2-tailed)	.	.041
		N	124	124

No other significance was found with:
Guideline Content (4b) or Implementation(5)
OR
Any specific antibiotics

Guideline Format Score (4a) was significantly related to **INCREASED** Total Systemic Use of Antibiotics

- Low correlation coefficient 0.18
- Narrow score range
 - * Weighting correct?
 - * Self selecting of hospitals



Computerised Prescribing and Antibiotic Use

- 20 out of 84 who answered had this
- 16 were teaching hospitals
- Significant INCREASE in prescribing of :
 - 3rd Generation Cephalosporins (p; 0.04)
 - Glycopeptides (p; .028)
- No relationship to:
 - Size of hospital (<>500: >1000 beds)
 - Long stay beds or paediatric beds?
 - Total systemic antibiotics
 - Fluroquinolones, Carbapenems, 4th Generation cephalosporins

Utilisation Co-Ordinator

- 34% (89) had a utilisation co-ordinator
- No significant relationship to total non ICU antibiotic use
- No relationship to any other non ICU antibiotic use (Cephalosporins, Glycopeptides, Fluroquinolones, Carbapenems)

Draft recommendations For hospitals

Antibiotic Policies

- Caution about prescriptive approaches e.g. cultural differences, attitudes, beliefs
- Ensure ownership & multi-disciplinary involvement

Draft recommendations For hospitals

Qualitative (Lichart) Scoring system for local implementation

e.g. HARMONY with review of ARPAC scores

- * Dated and Revised (How often?)
- * Strategic (local) goals
- * Use local resistance data
- * Evidence based where possible!

Draft recommendations For hospitals

In ARPAC data (same as HARMONY)

- Empiric & Prophylactic therapy : many common components
- Portable (60%)
- No of pages : variety: index needed if large
- Few have costs (34%)
- “Text Book” aspects: no consensus e.g. side effects, bacterial targets
- Intranet: few have thus far

Draft recommendations For hospitals

How should antibiotic guidelines be implemented?

Voluntary?

Compulsory?

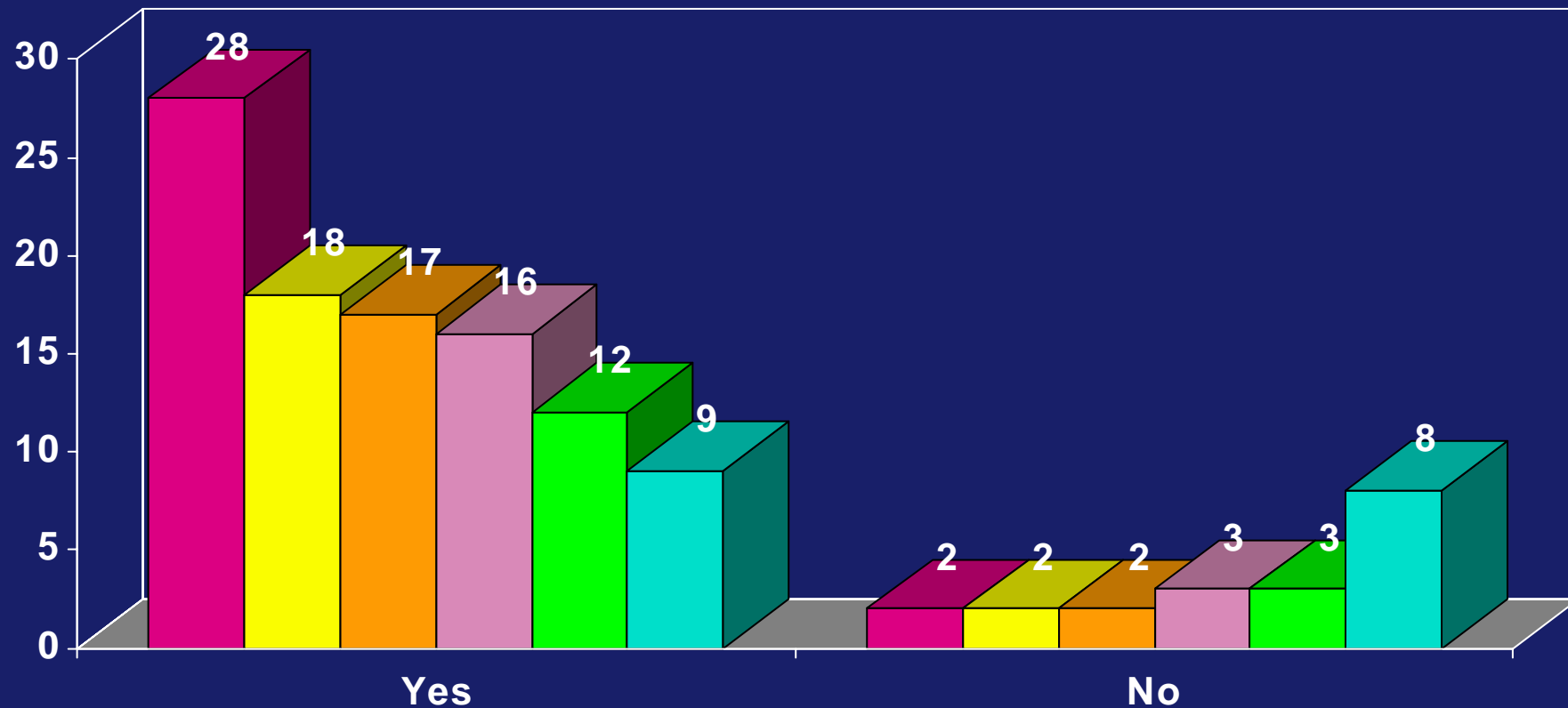
- Is there a “right answer” Start voluntarily, audit and see how you go?
- “Engineer out” issues e.g. automatic stop dates?

Depressing how few use this!

Draft recommendations For National Health Authorities

- No data in ARPAC to positively inform:
 - Involve politicians, policy makers, media, patient advocates
 - Multi-disciplinary involvement of healthcare workers in development groups
 - Use rigorous approach e.g. SIGN & AGREE methods
 - standardised methodology to maximise validity
 - systematic reviews
 - explicit linkage between recommendations and evidence

HARMONY: Multiple Documents



Join Lab and Ant. docs? SCBUs

Haem. & Onc. units

ICUs

Others

Liver and/or renal units

Draft recommendations For National Health Authorities

- Local policies encouraged e.g.
 - Performance Indicators: discuss?
 - HARMONY approach modified with ARPAC data producing national templates with qualitative scoring system
 - Facilitates local & national development
- Being used in NL, & has been used in several other countries

Draft recommendations For European Health Authorities

- Recommendations for national programmes are established in many reports e.g. Microbial Threat Meeting
- Fora are needed for International Reflection
 - * ESGAP study group/ECCMID
 - * DG SANCO: EARSS, ESAC & HELICS/IPSE
 - * ECDC will interact
- ARPAC will inform these
- EU Review Legislation?

Council Recommendation on the Prudent Use of Antimicrobial Agents in Human Medicine

Bronzwaer, 2004

MS

- to have in place an appropriate intersectoral mechanism
- to report on the implementation of recommendation

MS+EC ➤ **developing indicators to monitor prescribing**

- propose common methodology, case definitions and nature and type of data to be collected concerning susceptibility of pathogens

EC

- develop a strategy for access to surveillance information and volume of antimicrobial use
- **establish principles and guidelines of best practice on prudent use of antimicrobial agents in human medicine**

Draft recommendations

Future Research

1) Many “Face Value” statements/processes are evident but why are they not implemented ?
Needs to be explored further;

- Knowledge, Attitudes, Beliefs
- Healthcare workers’ dynamics - Managers, Clinicians, Pharmacists
- Resources, Priorities.....
- Processes implemented but not sustained
e.g. automatic stops- loss of staff, new staff

Draft recommendations

Future Research

- 2) Evidence base OFTEN not there: need more good quality studies
- 3) More on cost effectiveness/modelling : WHO meeting policy makers wanted their own country data

Draft recommendations

Future Research

- Further mine the large ARPAC database
- Develop a consensus on priorities for an R&D Programme
- Agree best methods to use for each of these
- Ensure duplication of effort avoided and aim for synergy of research teams e.g. Current DG R&D Programmes