THE SECRETS OF MRSA CONTROL IN THE NETHERLANDS

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MRSA - learning from the best

- Are we the best?
- Why are we the best?
- The practice of S&D
- Proposal to the UK Government

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SEARCH AND DESTROY

BY:

- early detection
- early identification and containment of the reservoir
- reservoir: patients, HCWs, environment

HOW:

- isolation of patients proven AND at risk
- screening of asymptomatic carriers
- cohorting of patients and personnel
- eradication of carriership
- education of personnel
- desinfection

CRITICAL SUCCESS FACTORS: NATIONAL

- National policy proclaimed ‘benchmark’ by Health Inspectorate
- National laboratory guideline on detection of MRSA
- National guideline for transporting patients from abroad

CRITICAL SUCCESS FACTORS: LOCAL

- Infection control committees
- *All* hospitals implement national policy
- Infection control facilities
- Trained HCWs

MRSA WIP guideline 2003: SEARCH AND DESTROY

- Risk classification of patients and HCWs
  - Class A: proven carriers of MRSA
  - Class B: high risk of being MRSA carrier
  - Class C: increased risk of carrying MRSA

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MEASURES: PATIENTS

- Class A (proven) & B (high risk):
  - Strict isolation upon admission
  - always gloves, gowns, masks, caps
  - Cohort nursing
  - Class A: Notification in computer system
  - Screen class B patients (multiple sites!)
  - Class A: treatment as soon as possible

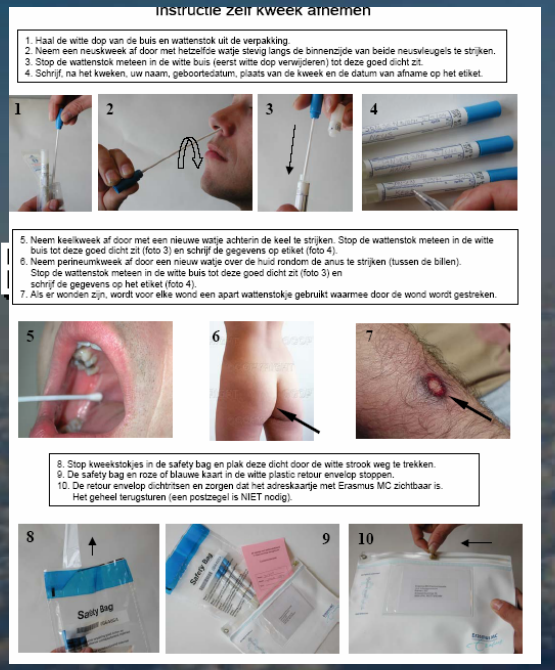
- Class C (increased risk) :
  - Screen and limit contact (single room) untill proven negative

MEASURES: HCWs

- Class A : Proven positive
  - Banned from work
    - With skin laesions: until proven negative
    - No skin laesions: until 2 days after R
  - screening for 1 year after treatment
- Class B : High risk
  - culture
  - only work on their own department until proven negative
- Class C : Increased risk (worked abroad)
  - culture, no limitations

OUTBREAK MANAGEMENT: THE UNEXPECTED PATIENT

- Roommates: strict isolation (class
- **ALL** other patients on same ward: culture, but no isolation (class C)
- discharged patients: culture, swabs sent by post
  - Compliance 90-95%
  - Effectiveness controlled by laboratory
- HCWs: class C (culture)



THE SECOND MRSA :

- MRSA outbreak committee

– Ward is closed for admissions
  - No entrance without gown, gloves, cap, mask
  - Personnel stay on closed wards (lunch etc)
  - Daily disinfection of rooms and passage

– Culture round (patients and HCWs) is repeated with each new finding

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CLOSED WARDS:

opened after:

1. All personnel
2. All patients are proven negative
   AND after

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And after:

3. Disinfection of the entire ward

⇒ disposal of all not-disinfected paraphernalia

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Feasible in low-endemicity situations

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MRSA in the community: PREVALENCE DATA

- Dutch prevalence rate 2000-2002: 0-0.06%
- UK prevalence rate: 2001: 1.5%
  Abudu et al: Epidemiol. Infect. 2001, 126, 351-6)

- de novo strains in the community:

PVL+, SCCmec IV

Outbreaks: Denmark,USA

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Search & Destroy
a plethora of measures not evidence-based?

Or empiric measures

that do work?

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S & D
lacks evidence but
this is not an argument to stop successful strategies

and not to start a successful strategy?

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Proposal to the Government: basic principles

- Half-hearted practices and following guidelines:

$\Rightarrow$ failure and frustration

- Use common sense and observational studies

Proposal to the Government starting points and basic principles

- Include all 3 reservoirs: minimize risk on transmission

1. Patient
2. **and** HCW:

   early detection, early isolation, early treatment

3. Environment

   Desinfection

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Proposal to the Government

- controlled prospective "case-control" study:
  two arms

- Cases: treated arm
  Regions with S&D in all HCCs

- Controls: No change in infection control

Case-Control: where?

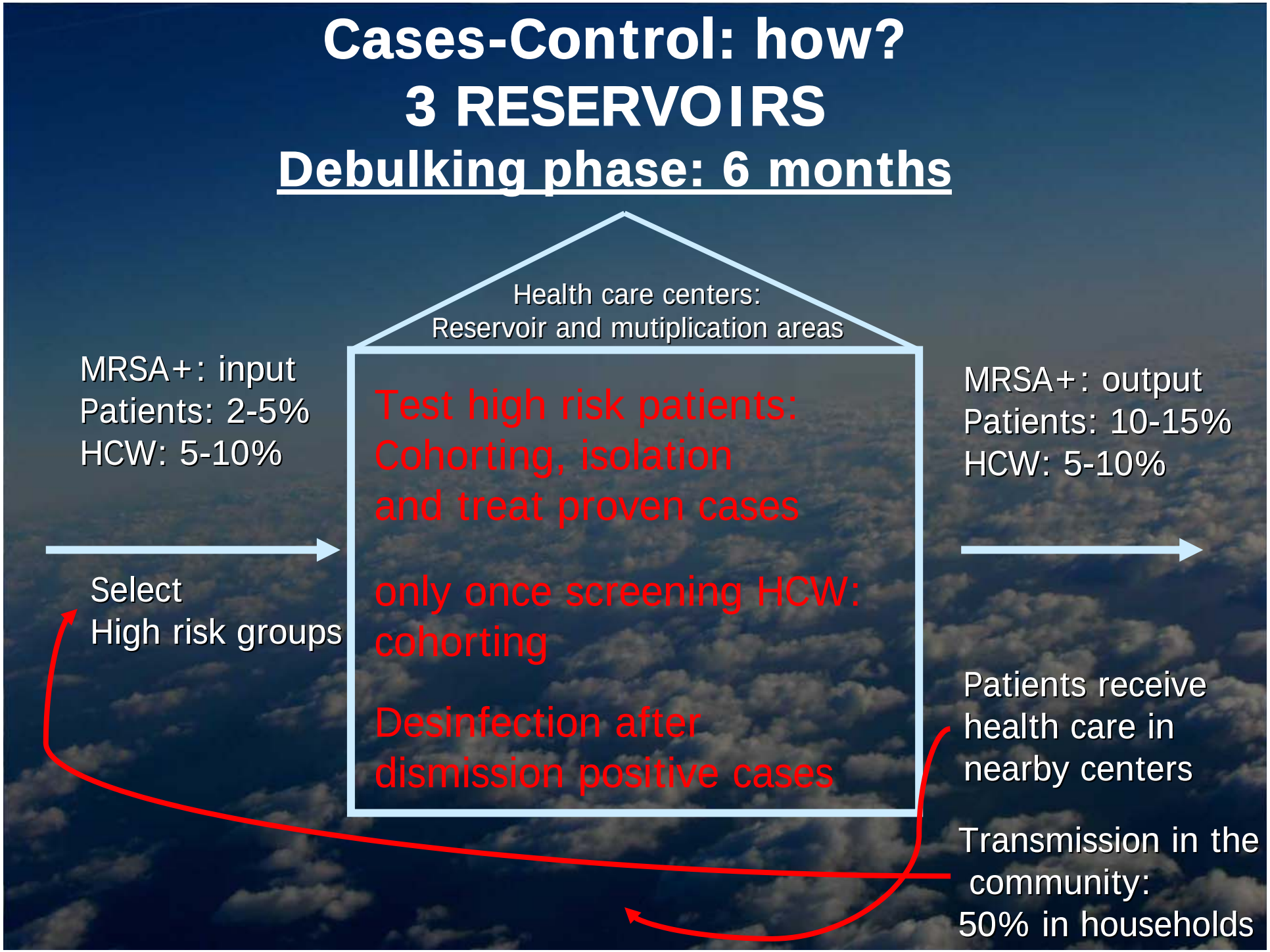
- Region:

  defined large geographic area where patients receive their health care and where health service is adherent

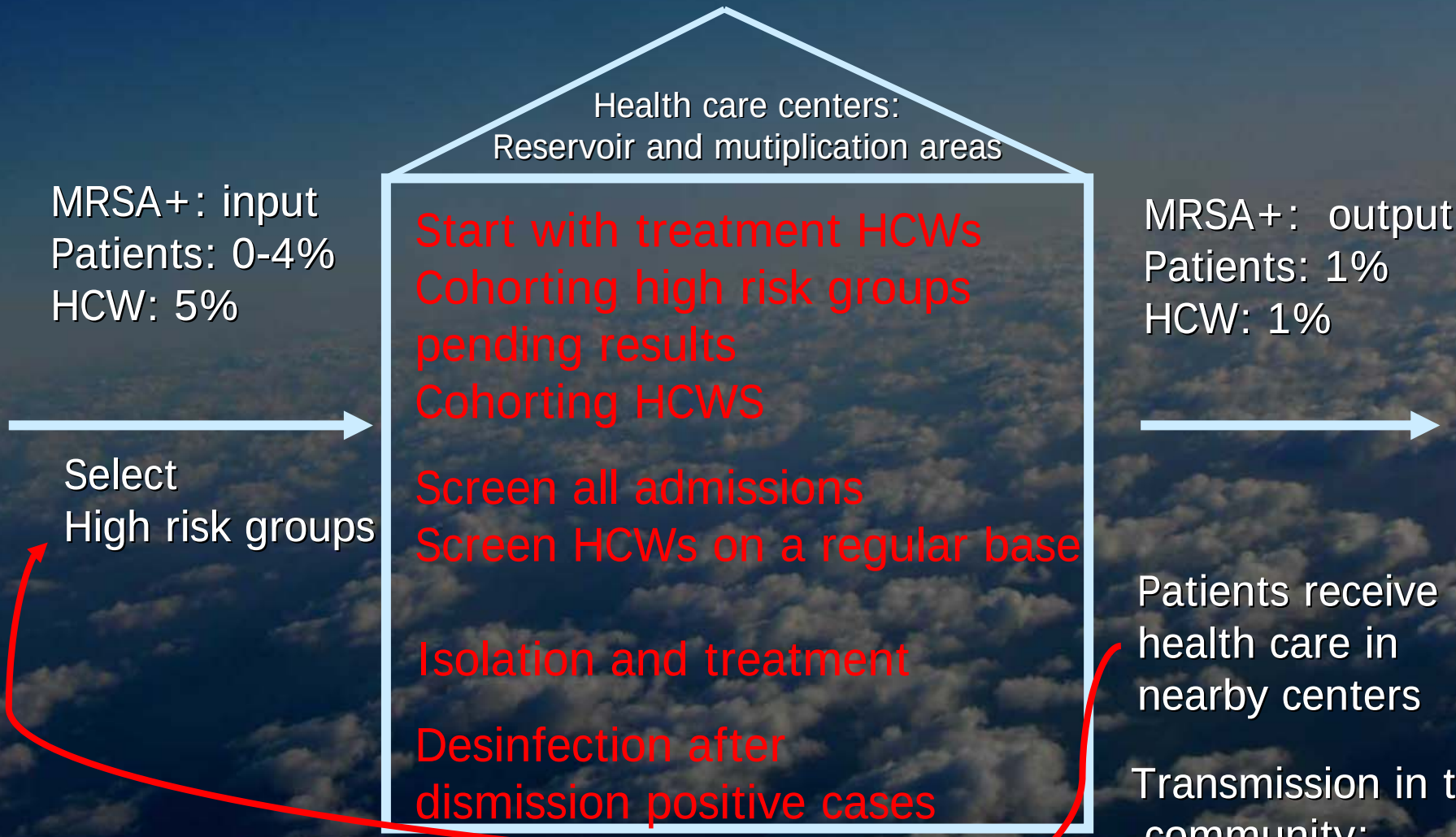
  selection for case regions:

  new hospitals and or low(er) bed occupancy?

Cases-Control: how?
3 RESERVOIRS
Debulking phase: 6 months



Cases-Control: how?
3 RESERVOIRS
Fine tuning phase: years



Proposal to the Government

"Case regions":

- subdivision within hospitals into:

-proven negative

-proven positive

-pending results

- for patients, HCWs, materials, diagnostics etc: cohort nursing
- Active surveillance on definite negative dept.

Proposal to the Government

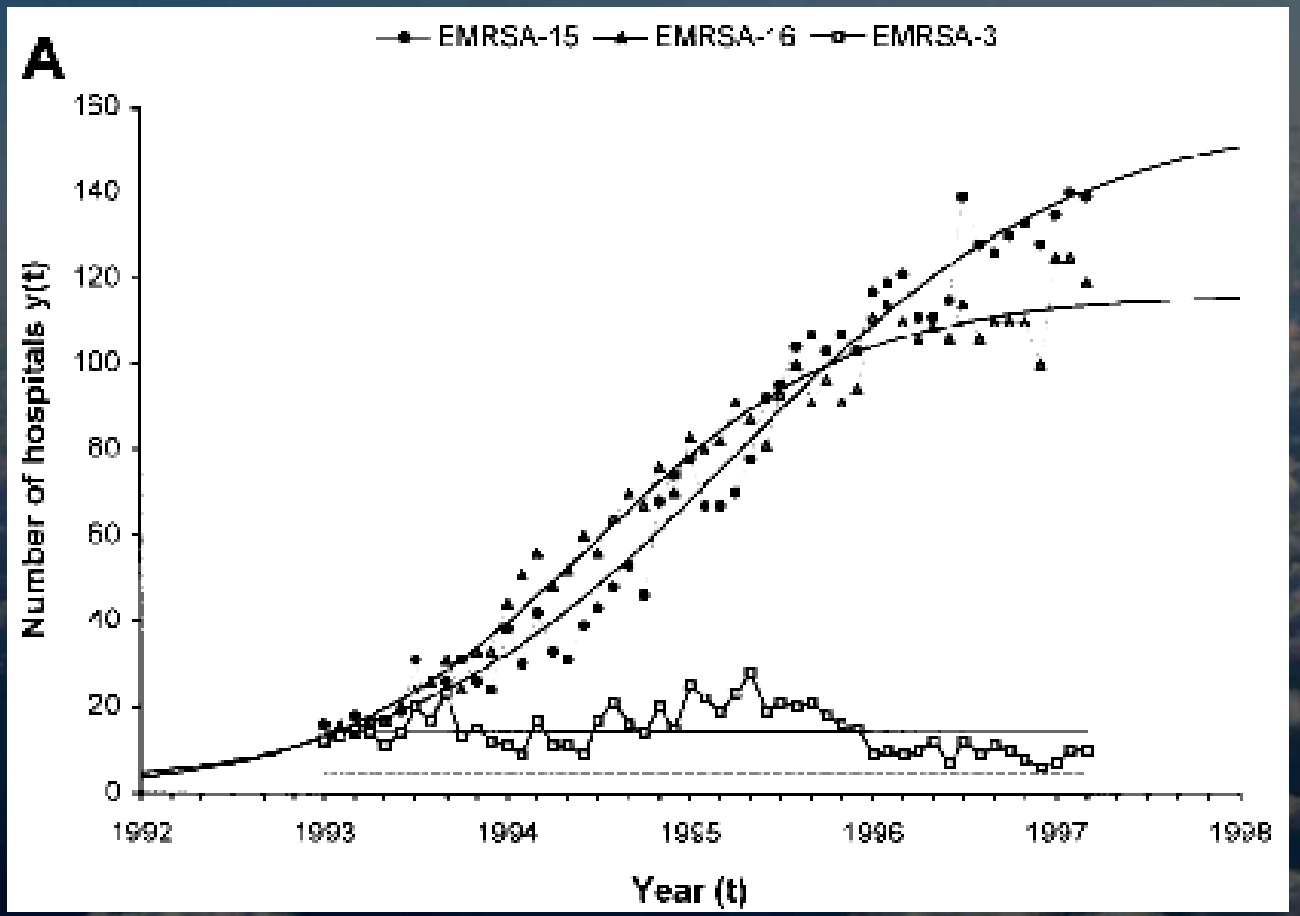
Needed:

- isolation facilities
- rapid detection techniques: hours, real time PCR
- national guideline: definitions, risk classes, measures
- electronic warning of positive patients
- reference laboratory and molecular typing

- motivation
- education
- investment

UK: E-MRSA

Experiences what happened if no uniform strategy and/or facilities are not sufficient



JID 1999;179;883-91

Case-Control: Why?

- Taking < 3 reservoirs or include part of a hospital/region:

  Proven not to be successful:

Cepeda, Lancet online: 7 january 2005
patients/ICU

- Evidence is needed:

Cooper et al BMJ 2004:

Conclusion: Current isolation measures recommended in national guidelines should continue to be applied until further research establishes otherwise.

The Patient

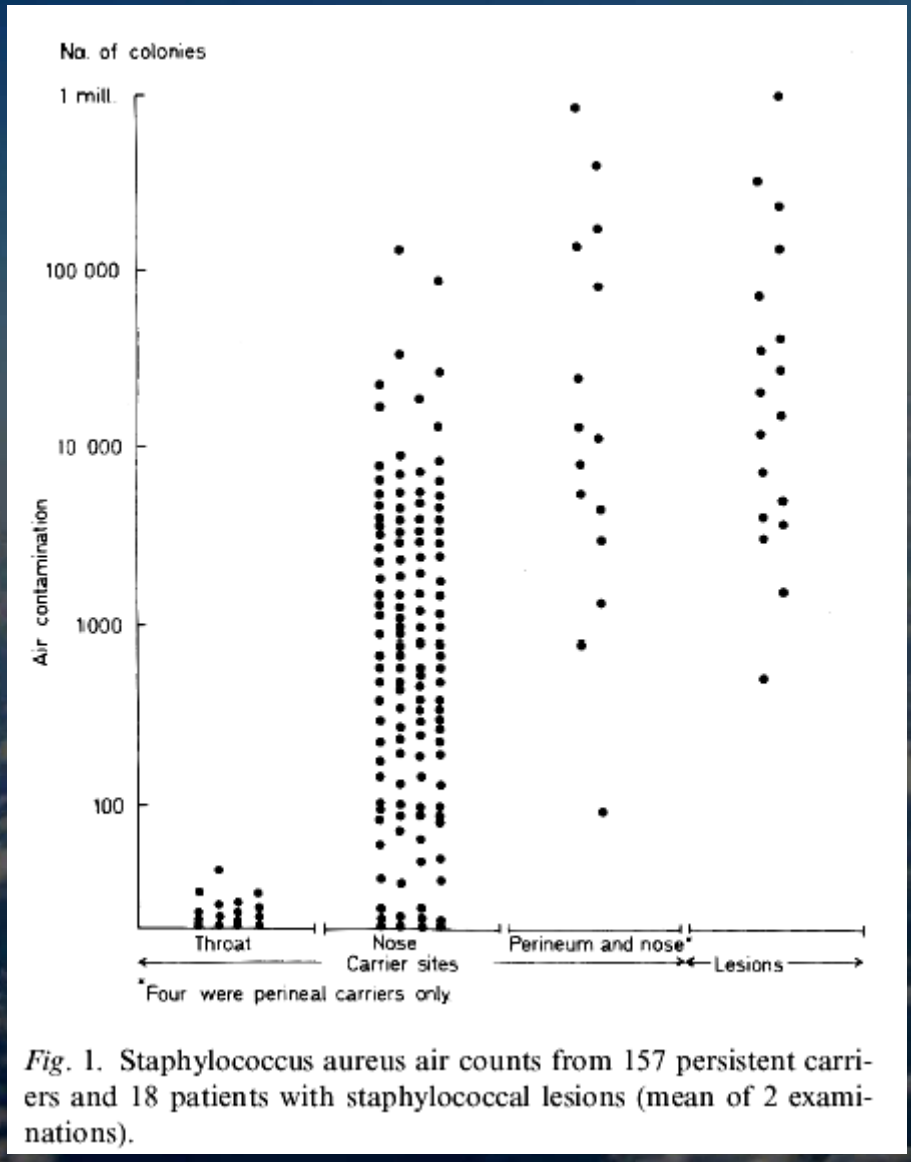


Fig. 1. Staphylococcus aureus air counts from 157 persistent carriers and 18 patients with staphylococcal lesions (mean of 2 examinations).

Solberg, Scand J Infect Dis 32: 587± 595, 2000

The environment

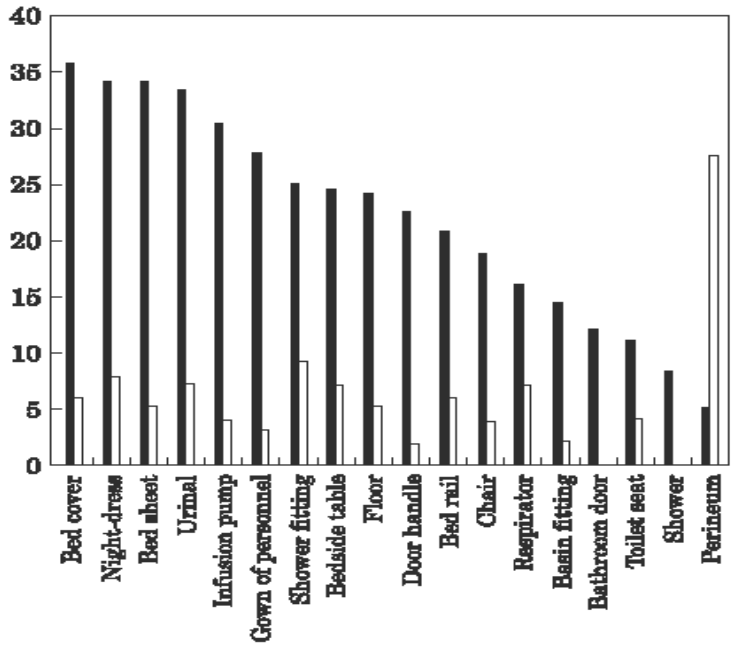


Figure 1 Detection rate of multi-resistant Gram-positive and Gram-negative bacteria on different environmental items. (■) Gram-positive pathogens; (□) Gram-negative pathogens.

Journal of Hospital Infection (2004) 56, 191–197

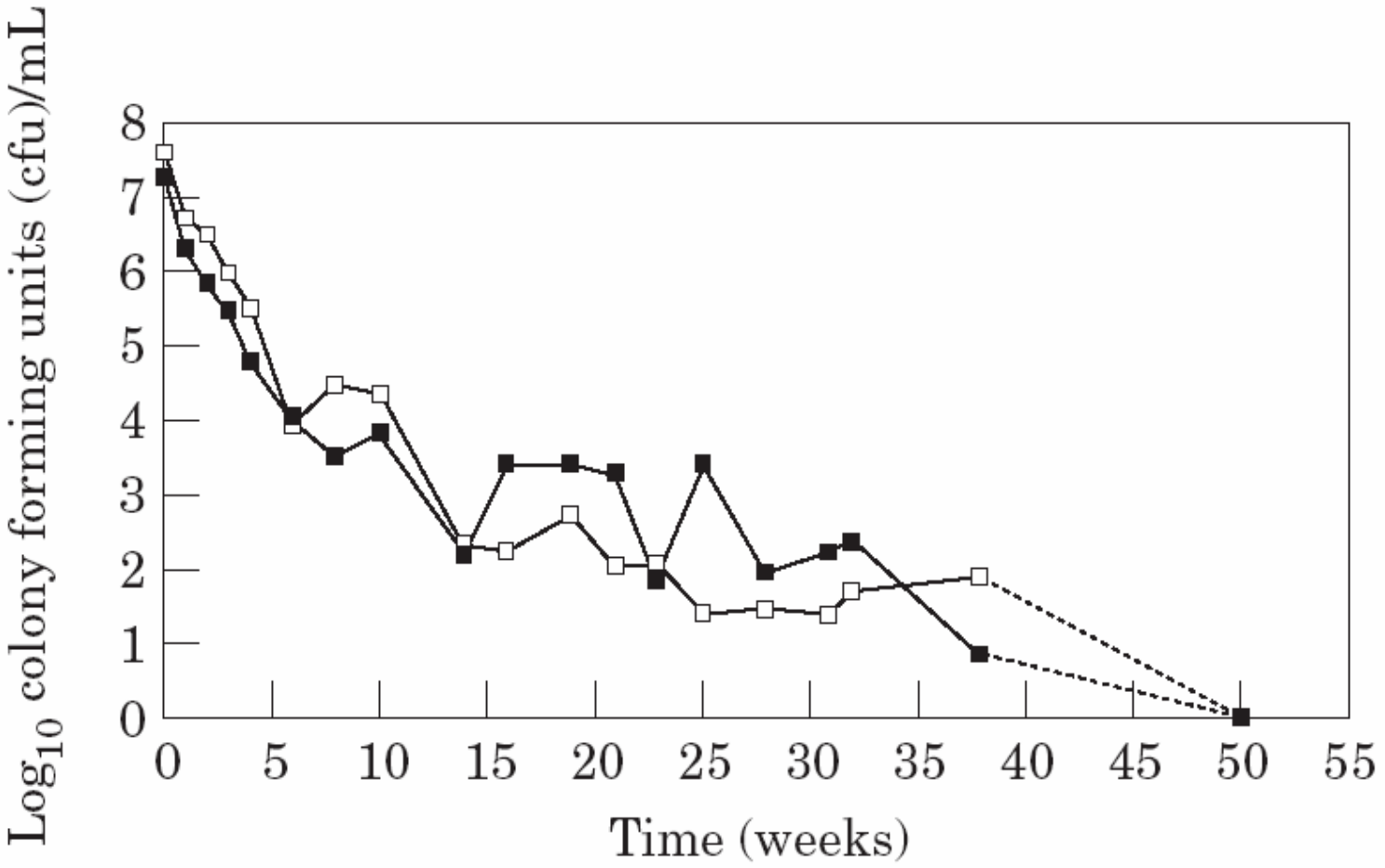
Table I *Contamination of room door handles* by methicillin-sensitive/methicillin-resistant* Staphylococcus aureus *(MSSA/MRSA) in a hospital*

Contaminants	No. of room door handles contaminated/No. of room door handles examined (%)	No. of room door handles contaminated at a density (cfu/door handle)				
		1~9	10~99	100~999	1000~9999	10000~99999
MSSA	41/196 (20.9)	28	8	2	1	2
MRSA	17/196 (8.7)	14	1	1	1	0
MSSA and MRSA	5/196 (2.6)	4	1	0	0	0
MSSA and/or MRSA	53/196 (27.0)	38	8	3	2	2

*The handles on a door inside and outside of a room were considered a single site.

J Hosp Infection 2002 51: 140-3

MRSA survival on sterile goods packaging



J Hosp Infection 2001 49: 255-61

The HCW: a source

METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS* OUTBREAKS AT THE UNIVERSITY MEDICAL CENTER UTRECHT BETWEEN 1992 AND 2002, CLASSIFIED ACCORDING TO INDEX CASE

Index Case	No. of MRSA Outbreaks	No. of MRSA Outbreaks With Colonized HCWs	No. of Secondary Colonized HCWs*	No. of Secondary Colonized Patients†
HCW from foreign hospital	2	2	0	3
HCW with relapse	2	2	1	2
Patient from foreign hospital	8	7	36‡	5
Unidentified index case	5	2	14	30
Total	17	13	51§	40

HCW: a reservoir

Table 1 Clinical infections with MRSA, infection rates, number of staff positive and bacteraemia data 1989–97

Year	1989	1990	1991	1992	1993	1994	1995	1996	1997
Blood*	1	0	0	1	2	1	12	18	74
Wound	1	1	1	4	3	3	14	37	–
IVI	0	1	0	0	1	0	4	5	–
Urine	0	0	0	0	0	0	2	2	–
Chest	0	0	0	0	0	1	7	5	–
Total no. infections	2	2	1	5	6	5	39	67	–
Infection rate** (%)	29	22	10	26	25	6	18	14	–
No. staff positive	0	0	2	4	8	40	14	19	42
Staff positivity rate† (%)	–	–	1	1	2	3	1	44	44
Total *S. aureus* bacteraemias (% MRSA)	–	–	–	–	83 (2.4)	88 (1.1)	100 (12.0)	121 (14.9)	182 (40.
B/c performed	–	–	–	–	9431	9895	10778	12028	13258
B/c positivity rate (%)††									
MRSA	–	–	–	–	0.021	0.010	0.11	0.15	0.56
MSSA	–	–	–	–	0.86	0.88	0.82	0.86	0.78
Nursing utilization‡ (%)	–	–	–	–	117.2	115.7	122.3	124.5	125.8
Daily census‡‡					20.4	20.0	21.3	21.5	21.8

Farrington et al, Q J Med, 1998

War against MRSA

evidence based?

We cannot give you the evidence, but you can!

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