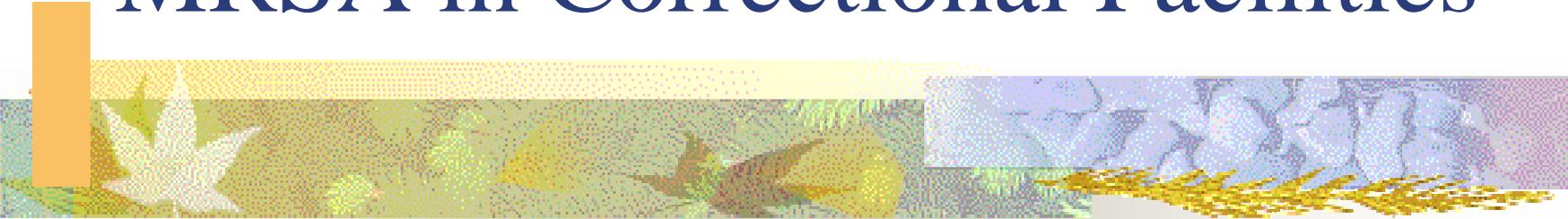


MRSA in Correctional Facilities

A decorative horizontal banner with a textured, halftone appearance. On the left, there is a vertical orange bar. The banner features a white star on a green field, a landscape with a sun and trees, and a stone wall on the right.

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Director of Preventive Medicine

Texas Department of Criminal Justice



CA-MRSA Background

- Injection drug users - Detroit, 1980
 - Identified injection drug users as high risk¹
- Jail outbreaks
 - Georgia (2001), LA County (2002, 2003), Tennessee, 2002
- Prisons
 - MS (2000), GA (2001, 2002)
- SF County jail
 - MRSA increased from 29% of isolates in 1997 to 74% in 2002²

¹ Ann Int Med 1982; 97:325-9,
Ann Int Med 1982; 96:11-6

² Clin Inf Dis 2003; 37(10):1384



Georgia Prison 1

- 200 bed, short-term (90 days)
- Rate - 423 infections/1,000 offender-years
- Interventions
 - Screening for skin disease
 - Standard antibiotic recommendations
 - Inmate education
 - Alcohol-based hand rubs
- No cases for 8 months after interventions
- 94.3 infections/1,000 offender-years in next 6 months



Georgia Prison 2

- 1,500 bed, long term
- Rate - 60.4 infections/1,000 offender-years
- Risk factors
 - Previous antibiotic use
 - Self-draining of boils
 - Skin laceration
 - Washing clothes by hand
 - Sharing soap
 - Incarcerated in 2001 or later



Georgia Prison 2

■ Initial Interventions

- “Appropriate” laundering
- Improved access to wound care
- Increased access to soap
- Offender education

■ Later Interventions

- Cohorting of infected offenders
- 5-day course of chlorhexidine soap for all offenders

■ No sustained response to interventions seen



Mississippi Prison

- Risk Factors (multivariate analysis)
 - Sharing pillows or bed sheets (AOR = 40.6)
 - Touching another offender's boil (AOR = 21.4)
 - Beta-lactam prescription within 1-12 months (AOR = 5.7)
 - Using state-issued soap (AOR = 5.0)
 - Self-reported insect bites (AOR = 4.2)

AOR = adjusted odds ratio



Mississippi Prison

- Nasal Colonization with MRSA
 - Female - 5.9%, Male - 2.5%
- Risk factors for colonization (multivariate)
 - Housed in disability section
 - Picking/popping furuncles
 - Doctor visit in past year
 - Longer incarceration



Mississippi Prison

■ Interventions

- Improved surveillance
- Optimized antibiotic recommendations
- Reinforcing infection control practices in clinics
- Offender education
- Use of antimicrobial soap



Georgia jail

- 2,800 beds, average stay 25 days
- Rate
 - 13.7 infections/1,000 offender-years initially
 - 84.3/1,000 offender-years with case finding
- Inappropriate antibiotic use (beta-lactams) noted, even when MRSA cultured
- Interventions
 - Screening for skin infection
 - Standardized treatment regimens
 - Hygiene education for offenders
 - Changes in laundry practice



Other jails

■ Tennessee

- Associated MRSA infection with tattooing
- Not associated with the tattooing apparatus
- Contact with infected offenders after skin was broken by tattooing

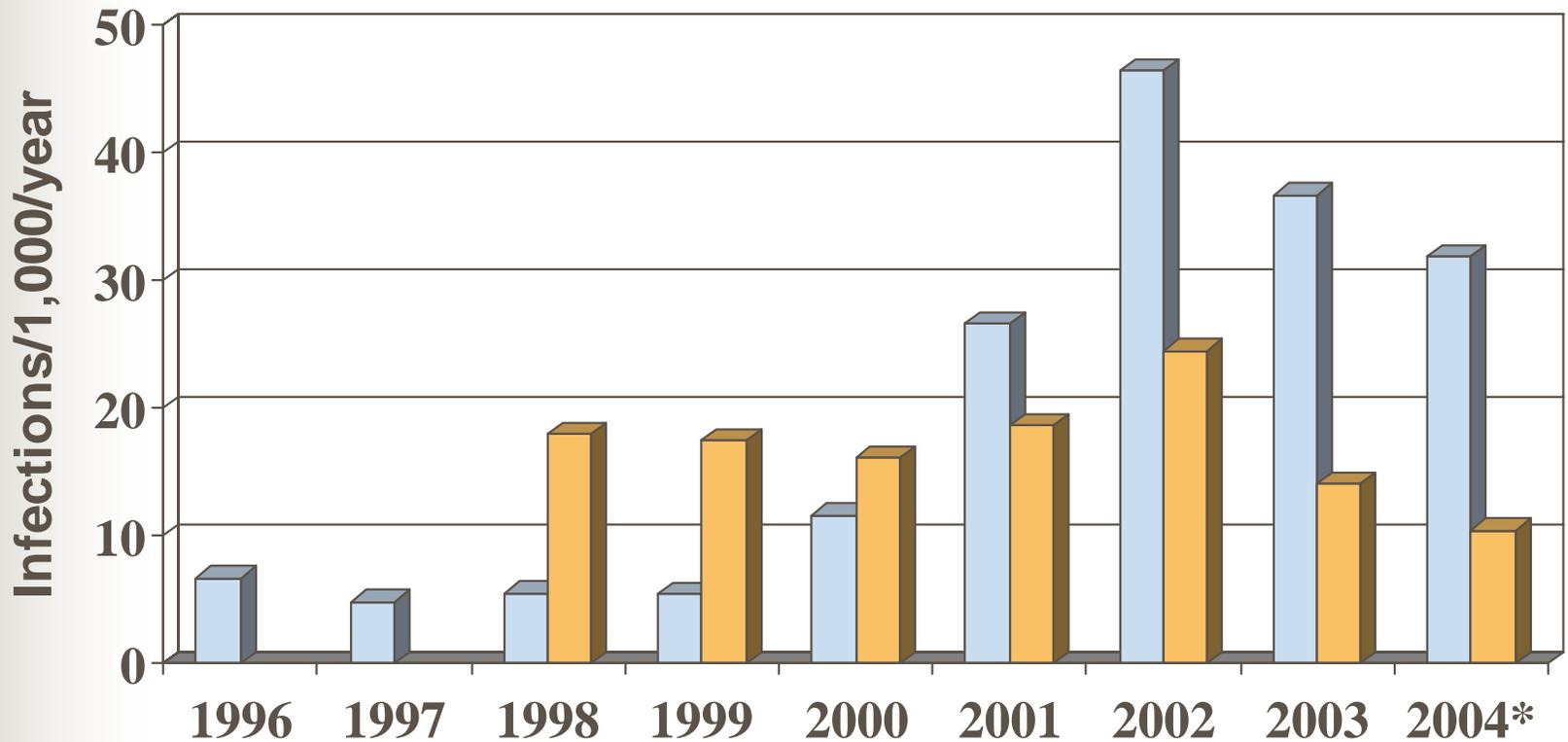
■ LA County

- Large numbers reported after surveillance started (46.1 - 77.6/1,000 offender-years)*

* MMWR 2003; 52(5):88
MMWR 2003; 52(41):992-6

Staph Infections in TDCJ

MRSA MSSA



*projected as of 6/30/04



TDCJ

- 149,424 Offenders
 - Prison - 104,430
 - State Jail and SAJP - 28,887
 - Transfer - 16,107
- 106 facilities
- About 1/3 population turnover/year
- 1-2% in transit on any given day
- Facilities are not air conditioned









MRSA by Facility Type - 2002

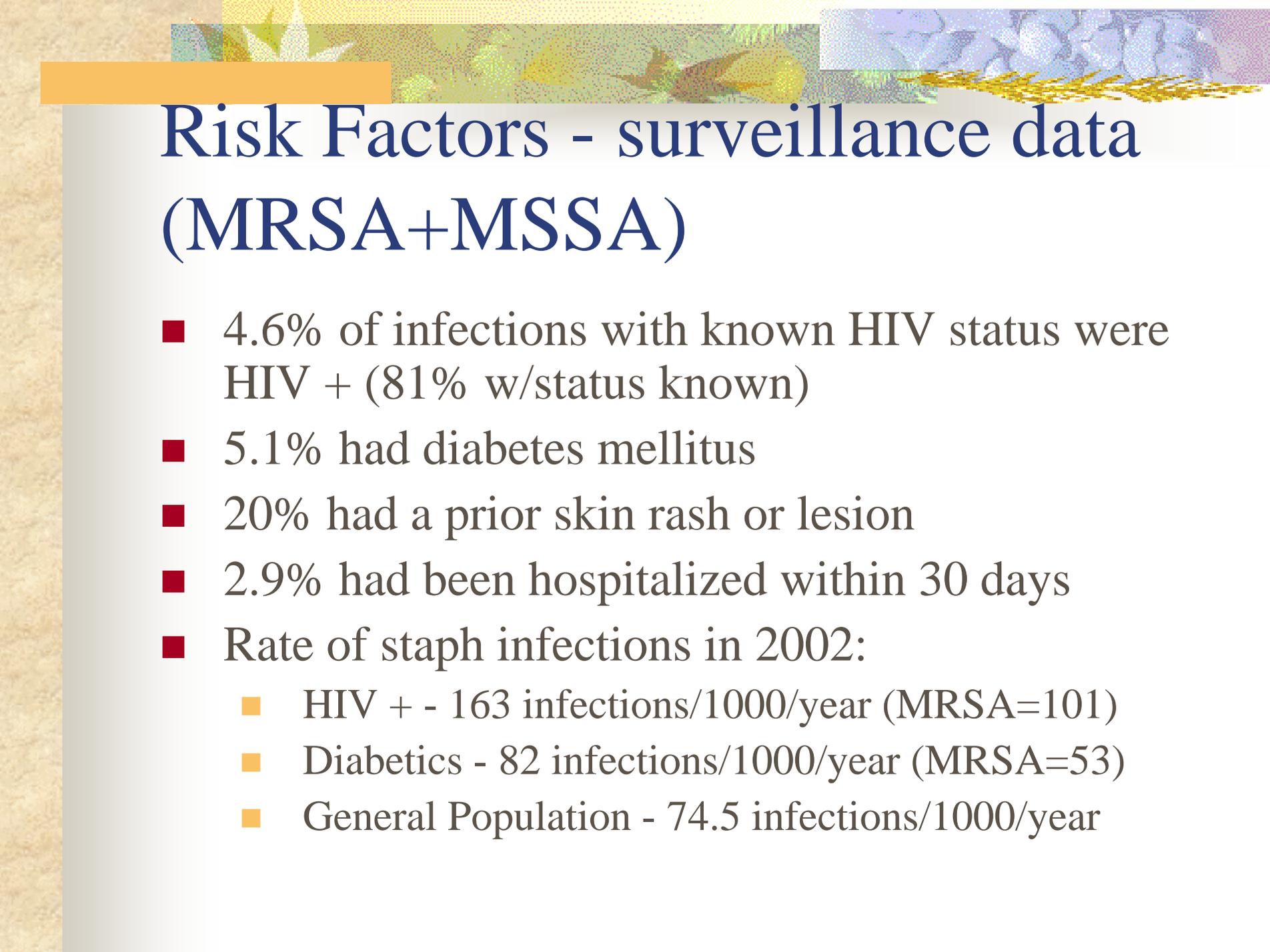
	MRSA Rate	MRSA Percent
Transfer	56.5	74%
State Jail	53.1	79%
Prison	29.7	60%

Rate expressed as cases/1000 offender-years



Surveillance Jan-July 2004

- <1% of MRSA cases serious - pneumonia, sepsis, etc.
- 15% classified as “serious skin infection” or cellulitis
- 85% minor skin infections
- Females - 28.3 cases/1000 offender-years
- Males - 32.0 cases/1000 offender-years



Risk Factors - surveillance data (MRSA+MSSA)

- 4.6% of infections with known HIV status were HIV + (81% w/status known)
- 5.1% had diabetes mellitus
- 20% had a prior skin rash or lesion
- 2.9% had been hospitalized within 30 days
- Rate of staph infections in 2002:
 - HIV + - 163 infections/1000/year (MRSA=101)
 - Diabetics - 82 infections/1000/year (MRSA=53)
 - General Population - 74.5 infections/1000/year



Case-control study - MRSA

- Weak association with conviction in Harris County (OR 1.53, 95% CI 1.00-2.33)
- Associated factors:
 - School attendance
 - Previous skin infection
 - Close contact to case within 30 days
- No association with
 - Job assignment
 - Sharing soap, clothing, linen, grooming items
 - Recent tattoo
 - Recent medical encounter



Medical Risk Factors in TDCJ

- Offenders incarcerated 1999-2001
- Medical Alert Codes reviewed
- Increased risk of MRSA if
 - Female
 - Age < 30
 - Non-Hispanic white
 - State Jail or SAFP inmate



Medical Risk Factors - TDCJ

Condition	Rate	RR	95% CI
Circulatory	18	1.5	1.2-2.0
Cardiovascular	17	1.3	1.1-1.7
Diabetes	20	1.7	1.5-1.9
ESLD	24	2.0	1.4-2.9
ESRD	27	2.3	1.5-3.3
HIV/AIDS	32	2.6	2.3-3.0



Medical Risk Factors in TDCJ

- Overall risk for MRSA was 12 initial infections/1,000 offender-years
- No association found with skin disease
- Medical Alert Codes may be inaccurate
- Cannot r/o associations being a surrogate for frequent medical encounter
- 84% of infections not associated with any of the medical risk factors listed

Nasal Colonization

Facility	Nasal Carriers		Infection Rates*	
	MSSA	MRSA	MSSA	MRSA
A	30.5%	3.1%	27.0	224.7
B	33.0%	2.7%	28.4	60.4
C	15.1%	15.1%	14.9	56.2
D	25.8%	4.9%	42.4	129.6

*Infections/1000/year



MRSA (and MSSA) Control in TDCJ

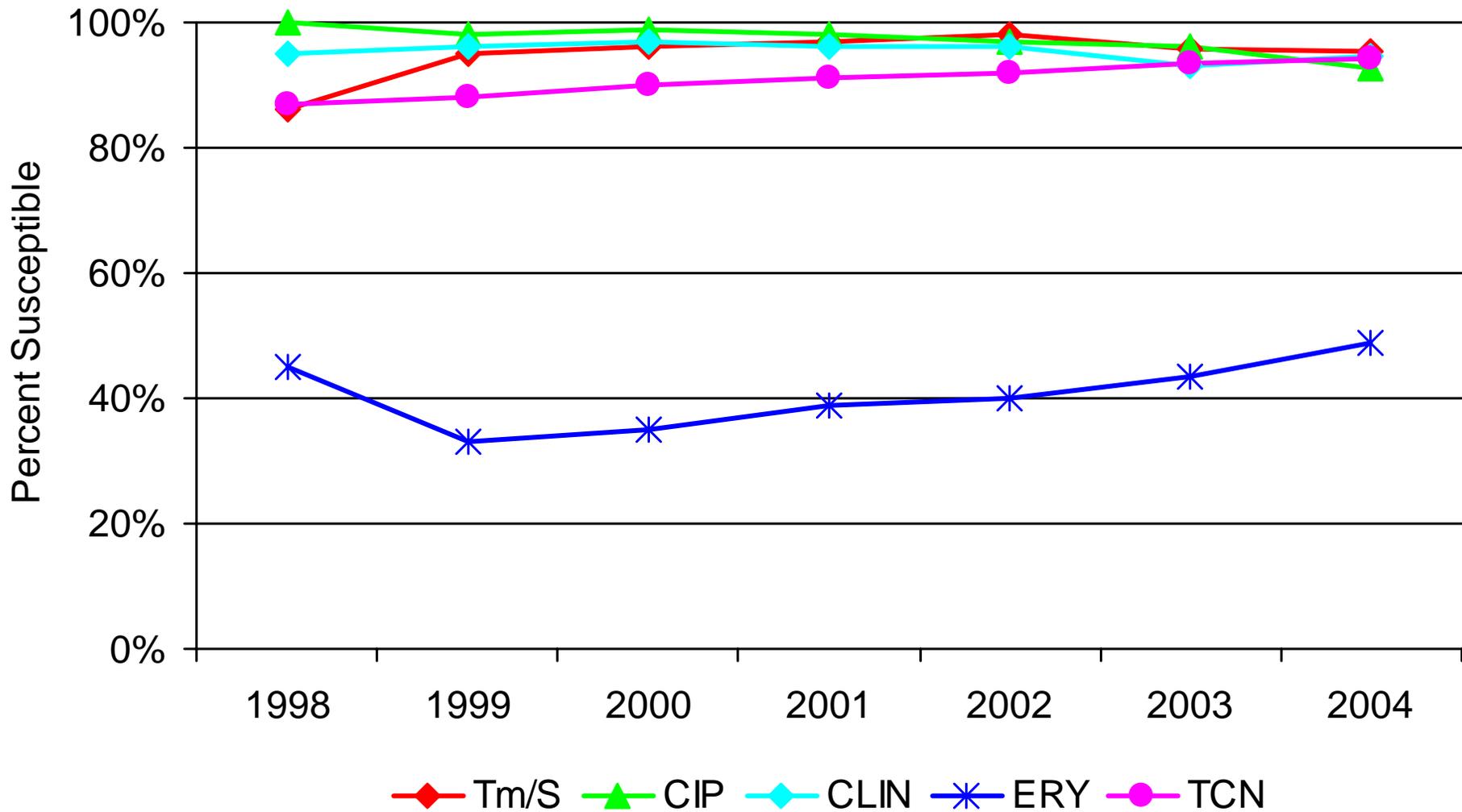
- Treat dermatitis promptly and aggressively
- Stress good hygiene with staff and offenders
- Culture draining lesions - diagnose early
- Treat appropriately
- Cover draining lesions or single-cell
 - Do not routinely isolate



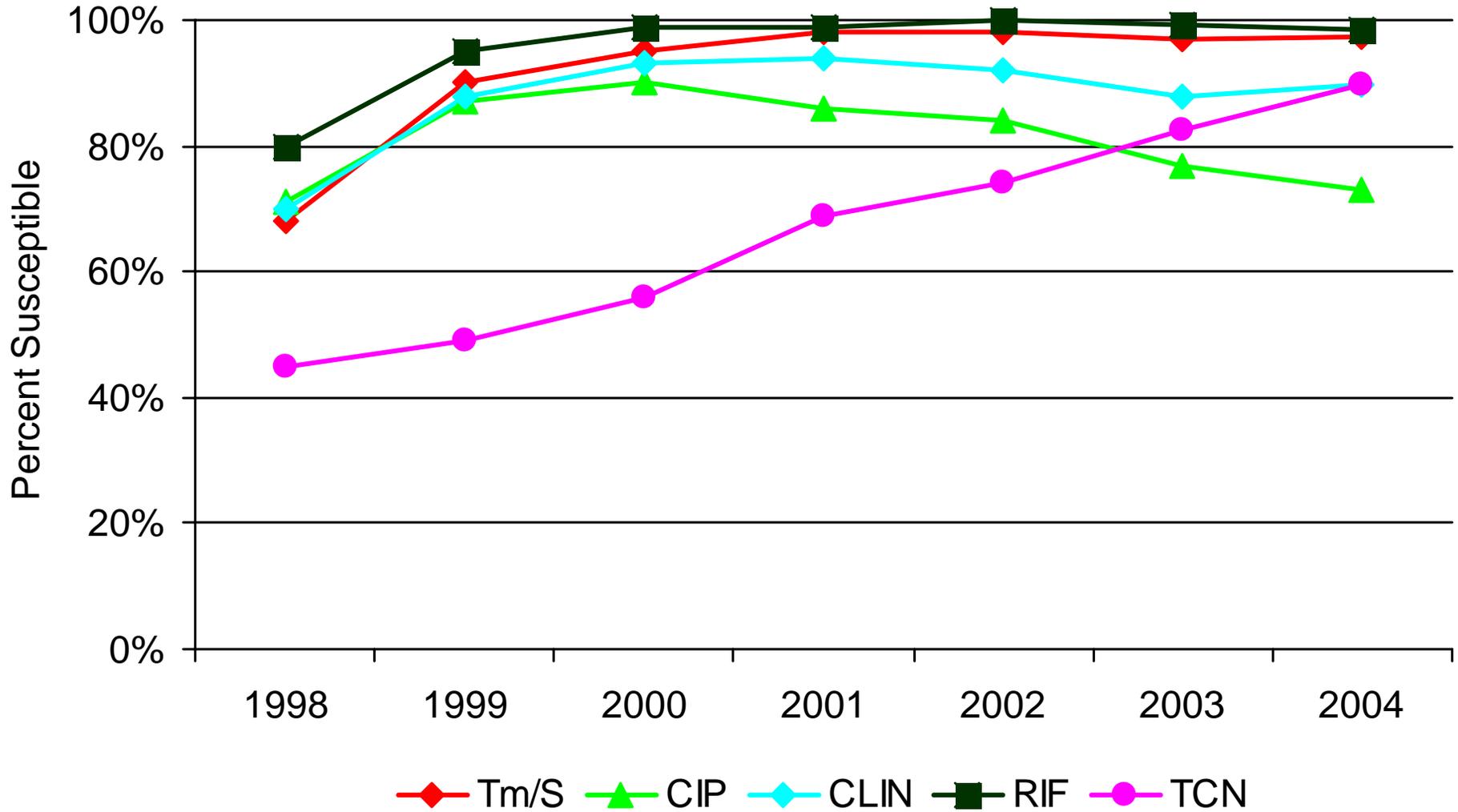
Treatment

- Assure drainage is contained
- Assure adherence to therapy
- Empiric initial therapy trimethoprim/sulfa and/or clindamycin

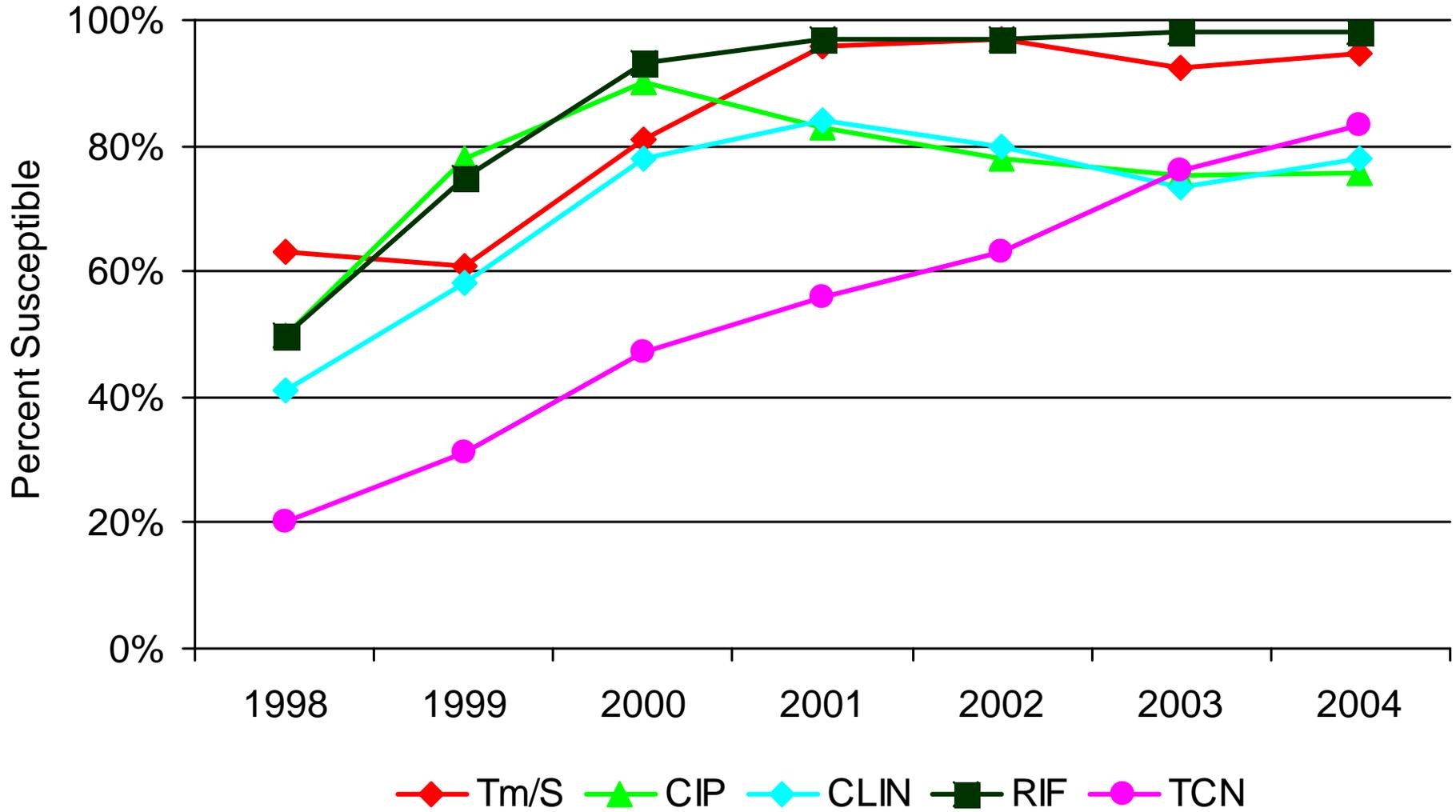
MSSA



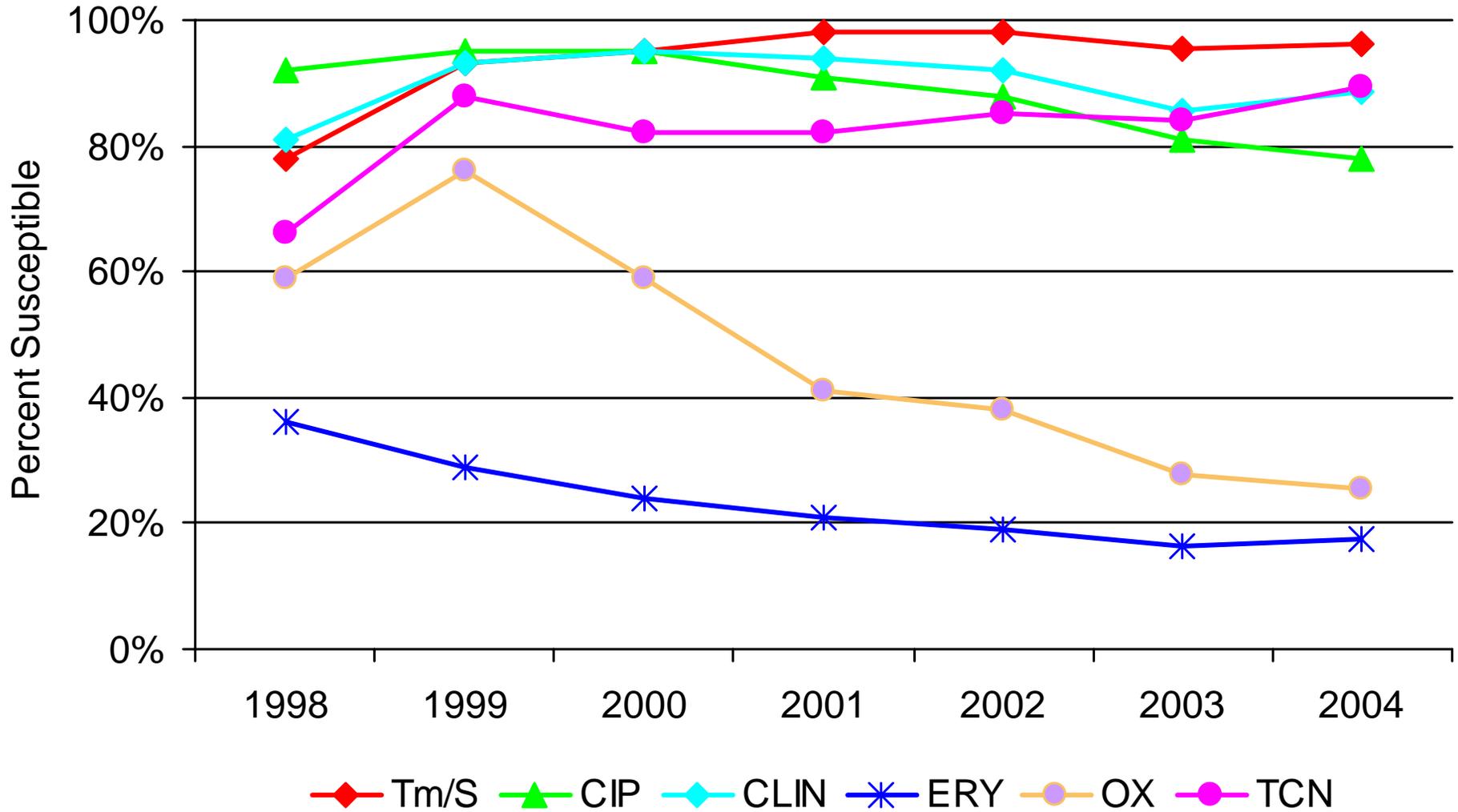
Initial MRSA



Recurrent MRSA



Total Staph

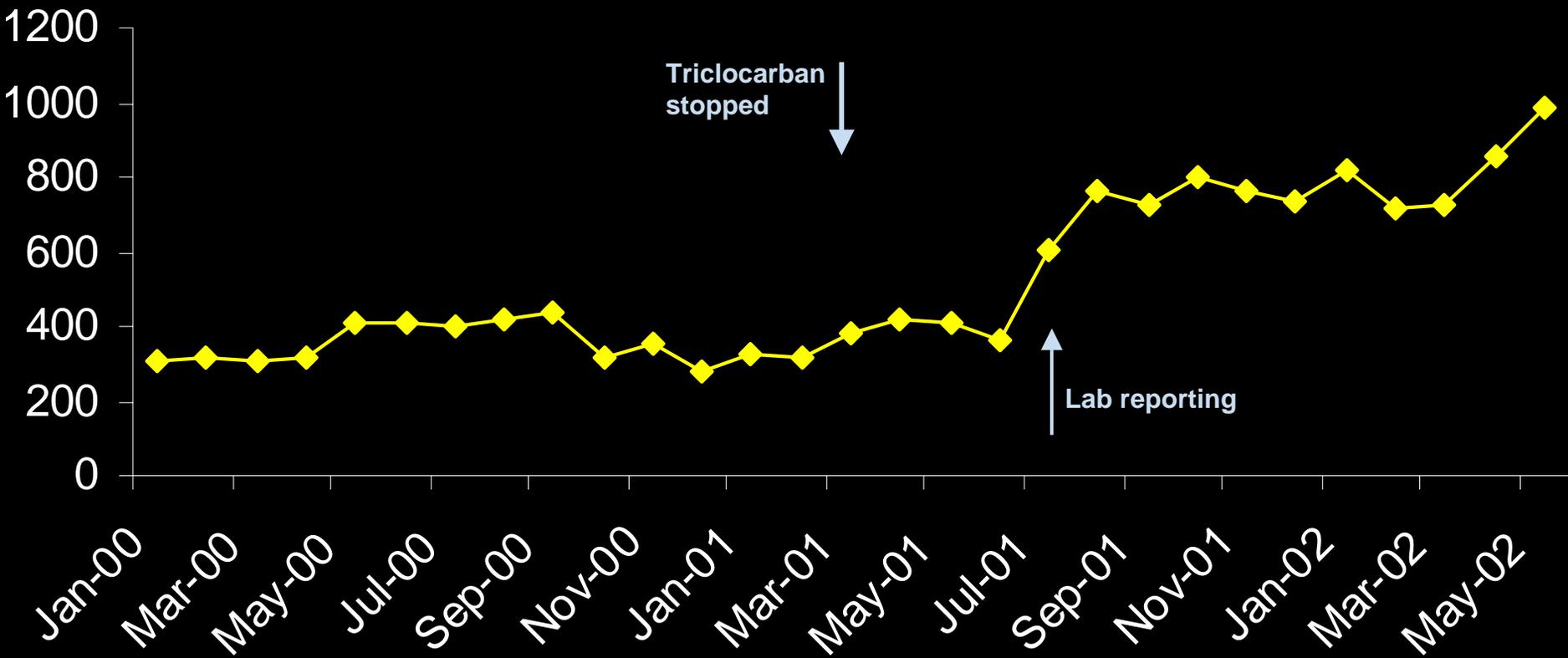




What Hasn't Worked

- Decolonization after first infection
- Cohorting
- Chlorhexidine for cohorted offenders
- Frequent (TID) disinfection of common areas
- Not clear whether the intervention was ineffective or the implementation was inadequate

Total Staph Infections/month



Total Staph Infections/month

