IV. The Louisiana Epidemic

Introduction

Definition of Terms: A glossary of terms used in the present publication is included in a previous paper.¹

In the previous papers of this series, the results of two controlled investigations were reported, one carried out in a hospital nursery in Cincinnati² and the other in Atlanta.³ Both studies demonstrated that the phenomenon of bacterial interference could be employed on a practical scale to prevent newborn colonization with hospital strains of staphylococci.

However, because of low disease rates encountered among control infants in the Cincinnati study and the occurrence of a high incidence of spontaneous cross-infection with Staphylococcus aureus strain 502A in the Atlanta nursery, additional observations seemed desirable. Neither one of these factors affected the validity or the interpretation of the data; nevertheless, it was felt that another series of observations under different conditions would be of value.

During March, April, and May of 1962, severe staphylococcal disease was noted supported in part by New York Health Research Council grant U-1231, Nursery Research Fund of New York Hospital, and grants E-3669, AI-00998, AI-02846 of the National Institutes of Allergy and Infectious Diseases, National Institutes of Health.
among infants and postpartum mothers recently discharged from a medium-size hospital in Louisiana, where approximately 150 babies were delivered monthly. A preliminary epidemiologic and bacteriologic survey undertaken in late May revealed that at least six staphylococcal pneumonias, two septicemias, two breast abscesses, and one case of osteomyelitis occurred among babies born at this institution during the preceding three months. Precise information about the incidence of less severe staphylococcal disease was not available, because no records of the occurrence of such illnesses were kept. The incidence of breast abscesses among the mothers was high during the first 25 days in May. For example, eight breast abscesses were surgically drained and four additional maternal breast abscesses were observed and cultured during a two-day investigation.

Five strains of staphylococci obtained from lesions were phage typed during this preliminary survey: four were recovered from breast abscesses and one from the pleural fluid of a three-week-old infant with pneumonia. All five strains were found to belong to phage type 80/81, and antibiotograms suggested their biologic identity. Four nasal carriers of the same staphylococcus type were found among 21 nursery and obstetrical attendants and nurses cultured.

Since these preliminary data indicated that the incidence of disease was high, it was decided to proceed under rigidly controlled conditions with artificial colonization of infants.

Methods and Materials

Nursery and Newborn Admitting Procedures.— The hospital under study maintains an active maternity service, serving primarily charity cases. The labor and delivery suites are separated from each other by a floor-to-ceiling partition. The nursery suite consists of four nurseries, separated by a common nurses station (Fig 1). Two units (Rooms A and B), used for full-term babies, are nearly identical, measuring respectively 22×14 ft and 24 ×12 ft, while two smaller units (Rooms C and D), measuring 18×10 ft each, are used entirely for premature infants and isolation care. The infants present investigation. The daily average census during the course of the study was 24 infants.

In these latter two rooms were not utilized in the study.

After delivery, the newborn was placed on a sterile sheet in a bassinet. An unowned nurse, who did not wash her hands prior to handling the newborn, instilled silver nitrate solution in both eyes, footprinted the infant, attached a name bracelet, and then carried the newborn to the nursery.

On admission to the nursery unit, the infant was given a complete bath using a hexachlorophene-containing detergent, weighed on a common scale, and then placed in an individual bassinet, containing the linen supply for his entire hospital stay. When entering the nursery area, personnel wore fresh caps, gowns, and masks and scrubbed their hands with a hexachlorophene-containing detergent for two minutes, with a shorter wash being employed between infants. The regular nursery personnel and a pediatric resident were the only individuals permitted to handle the newborns. Mothers were housed on adjacent wards and were discharged 24 hours after delivery, without having had any direct contact with their baby throughout its nursery stay which averaged four days. Infants delivered without the usual sterile precautions were assigned to the same units as "clean" infants but, in addition to the routine admission procedures, received intramuscularly 50,000 units of aqueous penicillin and

Fig 1.—A simplified floor plan of the nursery unit.
25 mg/kg of streptomycin twice daily for three days.

The usual admission practice consisted of assigning newborns to one room until it was filled and then to the other; three days before our investigations were begun, newborns were admitted alternately to the two full-term nurseries, a procedure continued throughout the study. No other changes in nursery practice or personnel were made. The four members of the staff known to be carriers of Staphylococcus aureus type 80/81 continued to work and were not informed of their colonization status.

Bacteriologic Methods.—Cultures from the mother's nose and the infant's nose and umbilicus were obtained in the manner previously described. Colonies for phage typing were selected at the Louisiana State Board of Health Laboratory in Alexandria and sent to the Epidemiology Branch Laboratory at the Communicable Disease Center, Atlanta, Ga. The criteria used for the selection of colonies for phage typing and testing by agglutination and antibiotic sensitivity have been described in detail previously. During the present hospital and follow-up study, 5,744 cultures were obtained and a total of 12,932 colonies were typed.

Artificial Colonization of Infants.—The strain used for artificial colonization was the coagulase-positive, penicillin-sensitive Staphylococcus strain 502A described in detail previously.4

Techniques of Inoculation.—Newborn infants were admitted alternately to nursery units A and B. Every infant admitted to Room B was inoculated on the nasal mucosa and umbilical stump with 2,000 to 4,000 organisms of strain 502A within two hours after birth, and the umbilical stump was reinoculated at 12 hours, using the technique previously employed. Babies admitted to Room A received the same amount of fluid delivered in an identical manner, except that sterile saline was employed as an inoculum. Twenty-nine infants were artificially colonized, while 36 served as controls. Four inoculated and three control infants born under nontoxic conditions received antimicrobial therapy and are not included in the analysis of the data.

Community Follow-Up.—Follow-up epidemiologic data and cultures were obtained by a public health nurse on 56 of the 58 infants included in this study. The seven infants who had received antimicrobial therapy were also followed. Home visits were conducted routinely at two-week intervals for the first eight weeks and then once each month. Follow-up cultures and epidemiologic data were collected in the manner previously described.1

Results

Incidence of Successful Artificial Colonization.—Twenty-five infants were inoculated with strain 502A on the umbilicus and in the nose. “Takes” were obtained in the nose of 21 infants (84%) and on the umbilicus in 23 infants (92%) (Table 1). Two of the infants in whom nasal inoculation was unsuccessful were found to be infected with coagulase-positive staphylococci at the time when artificial colonization with strain 502A was attempted.

Interference at the Nasal Site.—Excluded from the analysis of the data was one infant who was colonized with both strain 502A and a nontypable staphylococcus within the first 24 hours of life, and the four "no take" infants. Of the 20 successfully inoculated newborns, one infant was colonized with another strain of coagulase-positive staphylococcus (type 80/81) during his hospital stay (Table

Table 2.—Nasal Colonization with Coagulase-Positive Staphylococci Other Than 502A in Control and Successfully Inoculated Infants During Hospital Stay and Initial Follow-Up

<table>
<thead>
<tr>
<th></th>
<th>80/81</th>
<th>Coagulase Positive</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H *</td>
<td>F *</td>
<td>H *</td>
</tr>
<tr>
<td>Inoculated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H *</td>
<td>1/20</td>
<td>1/20</td>
<td>0/20</td>
</tr>
<tr>
<td>Control</td>
<td>14/33</td>
<td>13/31</td>
<td>5/33</td>
</tr>
</tbody>
</table>

* Indicates infants in category/total number of infants; H indicates hospital stay; F, follow-up at 2 weeks.
† Take: presence of 502A strain detected at 24 hours after inoculation.
‡ One infant colonized with two strains on day 1 of life and four no-take infants excluded.
2). In the control group, the noses of 14 of 33 infants became colonized with *Staphylococcus* type 80/81, and an additional five control infants acquired coagulase-positive staphylococci other than strain 502A or type 80/81. Therefore, 19 of 33 infants in the control group acquired coagulase-positive staphylococci other than strain 502A. The difference between the inoculated and the control groups is significant at *P* = 0.001.*

At the initial two-week follow-up visit, 2 of 20 infants in the successfully inoculated group were noted to be nasal carriers of coagulase-positive staphylococci other than the 502A strain. In the control group, 23 of 31 were now nasal carriers of staphylococci other than the 502A strain.

Among the four "no take" infants, no coagulase-positive staphylococci could be isolated from one baby throughout his hospital stay, one infant was found to harbor strain 502A on subsequent cultures, another was infected both with strain 502A and an organism typed by phages 7 and 77, and the fourth baby was colonized with a nontypable coagulase-positive staphylococcus.

### Table 3—Umbilical Colonization With Coagulase-Positive *Staphylococci* Other Than 502A in Control and Successfully Inoculated Infants During Hospital Stay and Initial Follow-Up

<table>
<thead>
<tr>
<th>Infants</th>
<th>80/81</th>
<th>Coagulase Positive Not 80/81 or 502A</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H *</td>
<td>F *</td>
<td>H *</td>
</tr>
<tr>
<td>Inoculated taken †</td>
<td>3/30 †</td>
<td>1/30 †</td>
<td>0/30 †</td>
</tr>
<tr>
<td>Control</td>
<td>17/33</td>
<td>9/31</td>
<td>8/33</td>
</tr>
</tbody>
</table>

* Indicates infants in category/total number of infants; H indicates hospital stay; F, follow-up.
† Take: presence of 502A strain detected at 24 hours after inoculation.
‡ Three infants colonized with two strains on day 1 of life and two no-take infants excluded.

### Interference at the Umbilical Site—Excluded from the analysis of the data were three infants colonized with two different staphylococcal strains within the first 24 hours of life, as well as two "no take" infants. Of the 20 infants successfully colonized on the umbilical site, three subsequently were found to have become infected with *Staphylococcus* type 80/81 (Table 3). Among the control group of 33 infants, 25 were colonized on the cord stump with coagulase-positive staphylococci other than strain 502A (17 were type 80/81). The difference in colonization rates with staphylococci other than strain 502A between the inoculated and the control groups is significant at *P* = 0.001.

### The Occurrence of Staphylococcal Disease

After their discharge from the nursery, 56 study infants were followed by home visits.

### Table 4—Relationship of Type of Staphylococcus Carriers in Infant's Nose to Development of Lesions in Infant and Household Contacts

<table>
<thead>
<tr>
<th>Lesion</th>
<th>80/81</th>
<th>80/81 &amp; 502A</th>
<th>502A</th>
<th>Other Coag &amp; Staph</th>
<th>Noncoag &amp; Staph</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conjunctivitis</td>
<td>2</td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Impetigo</td>
<td>4</td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Breast abscess Family</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Maternal breast abscess</td>
<td>2</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Maternal vaginal abscess</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sibling impetigo</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesions/index family</td>
<td>10/12</td>
<td>0/6</td>
<td>3/21</td>
<td>2/9</td>
<td>2/5</td>
</tr>
</tbody>
</table>

* Infant colonized with 80/81 on umbilicus and 80/81 cultured from lesion.
† Both mothers 80/81 nasal carriers prior to exposure to infant; 80/81 isolated from lesions. Both newborns colonized with only 502A.
During the five-month follow-up period, 17 lesions were noted to have occurred in these infants or their families. Fifteen lesions were present at the time of a home visit, and were therefore cultured. Among the 12 infants nasally colonized only with *Staphylococcus* type 80/81, disease was noted either in the index infant or in a family member on 10 occasions (Table 4). Lesions in the infants consisted of two cases of conjunctivitis and four of impetigo. Among the household members, two maternal breast abscesses occurred as well as one maternal vaginal abscess and one case of impetigo in a sibling. From all 10 lesions, *Staphylococcus aureus* type 80/81 was isolated.

A total of 24 infants carried only the 502A strain in their nose from the hospital into their home since, in addition to the 20 successfully inoculated infants, 3 control and 1 infant initially unsuccessfully inoculated were found to have become colonized with the 502A strain by the time of discharge. One infant nasally colonized with strain 502A developed a breast abscess; type 80/81 was isolated from a culture of this lesion. This infant was known to be an umbilical carrier of type 80/81. In addition, two breast abscesses occurred in mothers of infants who were colonized with strain 502A both in the nose and on the umbilicus. Nasal cultures from these mothers had been obtained while they were still in the hospital, and these had shown that both of them were nasal carriers of *Staphylococcus* type 80/81 before they had been in contact with their infants. Cultures from these abscesses taken at the time of incision and drainage yielded *Staphylococcus aureus* type 80/81 only.

Two successfully inoculated and four control infants were found to carry both 502A and 80/81 at discharge. No lesions were uncovered in these six infants. Two of nine infants colonized with coagulase-positive staphylococci other than *Staphylococcus aureus* type 80/81 or strain 502A developed a mild illness; one infant had a conjunctivitis from which a nontypable coagulase-positive staphylococcus was isolated, and the other had a mild case of impetigo of short duration from which no cultures were obtained. Among the five infants whose noses were not nasally colonized with any coagulase-positive staphylococci at discharge, two cases of impetigo occurred. In one of these patients no culture was obtained, while type 80/81 was isolated from the lesion and the umbilical cord of the second case.

The differences in lesion rates between infants nasally colonized with strain 502A or type 80/81 are significant at \( P = 0.003 \).

*Staphylococcus* type 80/81 was isolated from 14 of the 17 lesions, while 1 case of conjunctivitis was associated with a nontypable coagulase-positive organism (Table 5). The two remaining patients, both of whom had impetigo, were not cultured. No

<table>
<thead>
<tr>
<th>Lesions</th>
<th>Inoculated Infants</th>
<th>Control Infants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impetigo</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Conjunctivitis</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Breast abscess</td>
<td>1 *</td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal breast abscess</td>
<td>2 †</td>
<td>2</td>
</tr>
<tr>
<td>Maternal vaginal abscess</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sibling impetigo</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Lesions/index family</td>
<td>3/25</td>
<td>14/21</td>
</tr>
</tbody>
</table>

* Infant colonized with 80/81 on umbilicus and 80/81 isolated from lesion.
† Both mothers 80/81 nasal carriers prior to exposure to infant; 80/81 isolated from lesion. Both newborns colonized with only 502A.
lesions attributable to strain 502A were found.

The incidence of lesions in the entire artificially colonized group of infants irrespective of whether or not they had successful "takes" has been compared to the entire group of control infants, some of whom were spontaneously colonized with strain 502A. In the artificially colonized group, three lesions occurred: one breast abscess in an infant and two breast abscesses in mothers. From all three lesions a type 80/81 staphylococcus was isolated. Among 31 control infants, a total of 14 lesions occurred among the babies or their family contacts (Table 6).

Nasal Colonization and Lesions in Infants Who Received Antimicrobial Therapy in the Nursery.—Seven infants, born under "sterile" conditions, received penicillin and streptomycin therapy during the course of the study. At the time of discharge, two of the four inoculated infants who had received antimicrobial therapy were found to be nasally colonized with type 80/81. The other two in whom artificial colonization had been attempted did not become infected with coagulase-positive staphylococci. Among the control infants receiving antimicrobial therapy, two babies were found to be colonized with type 80/81 and one baby carried no coagulase-positive staphylococci. Three episodes of staphylococcal disease, consisting of two breast abscesses in mothers and one case of impetigo in an infant, were observed in the households of two of the four infants colonized with type 80/81. *Staphylococcus aureus* type 80/81 was isolated from all three lesions.

Cross Infection With Strain 502A.—Despite the fact that the artificially colonized
infants were maintained in a nursery unit physically separate from that of the control infants, 7 of the 31 control babies (23%) became spontaneously colonized on the nasal mucosa with strain 502A.

Surveillance of the Nursery Following the End of the Period of Artificial Colonization.—Nasal and umbilical cultures were obtained three times weekly from all infants in the nursery for a period of ten weeks after the end of the study. Several days after artificial colonization of babies with strain 502A had been terminated, 50% of the infants were still found to be colonized with type 80/81 (Fig 2). Because of this, all newborns delivered over a three-day period were artificially colonized with strain 502A at birth. Immediately following this procedure, Staphylococcus type 80/81 disappeared from the nursery and could not be recovered from infants at discharge. Interestingly enough, the colonization rate with all types of coagulase-positive staphylococci fell to a level of 18% at about this time and this low level persisted for a period of four weeks, even though cross colonization with strain 502A had virtually disappeared two weeks earlier, perhaps because no nursery personnel had become carriers of the 502A strain. Six weeks after artificial colonization of newborns was stopped, 80% of the infants were again colonized: this time with nontypable coagulase-positive staphylococci.

Persistence of Nasal Colonization With Coagulase-Positive Staphylococci.—Data were available on the rate of persistence of nasal colonization with coagulase-positive staphylococci in 55 newborn index infants who were followed from one to five months after discharge from the nursery. The 55 infants included the 4 babies who were nasally colonized with the 80/81 strain at discharge but who were excluded from the analysis of the interference data because they were born under "unsterile" conditions and arbitrarily received prophylac-

Table 7.—Persistence* of Nasal Colonization of 61 Staphylococcal Strains in 55† Infants Followed From One to Five Months

<table>
<thead>
<tr>
<th>Group</th>
<th>Two-Week Colonization Status</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>502A Strain</td>
<td>29/30</td>
<td>29/30</td>
<td>19/30</td>
<td>10/30</td>
<td>15/30</td>
<td>14/29</td>
</tr>
<tr>
<td></td>
<td>(97)</td>
<td>(82)</td>
<td>(53)</td>
<td>(50)</td>
<td>(46)</td>
<td></td>
</tr>
<tr>
<td>80/81 Strain</td>
<td>21/22</td>
<td>14/22</td>
<td>8/22</td>
<td>5/21</td>
<td>3/21</td>
<td>1/21</td>
</tr>
<tr>
<td></td>
<td>(98)</td>
<td>(62)</td>
<td>(33)</td>
<td>(23)</td>
<td>(11)</td>
<td>(8)</td>
</tr>
<tr>
<td></td>
<td>(100)</td>
<td>(91)</td>
<td>(87)</td>
<td>(87)</td>
<td>(80)</td>
<td>(44)</td>
</tr>
</tbody>
</table>

* Number with persistence/number colonized initially with strain (%).
† Includes four infants colonized with 80/81 strain who received antibiotics during nursery stay because of "unclean" delivery.

Table 8.—Relationship of Prior Nasal Colonization With Staphylococcus Aureus Among 53 Mothers to Subsequent Acquisition of Staphylococci From Their Nasally Colonized Infants

<table>
<thead>
<tr>
<th>Prior Maternal Nasal Colonization</th>
<th>Total No. at Risk</th>
<th>Acquired Nursery Strain</th>
<th>Did NOT Acquire Nursery Strain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coagulase-positive staph isolated</td>
<td>16</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>No coagulase-positive staph isolated</td>
<td>39</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>55*</td>
<td>20</td>
<td>35</td>
</tr>
</tbody>
</table>

* Includes four infants colonized with 80/81 strain who received antibiotics during nursery stay because of "unclean" delivery.

Table 9.—Relationship of Prior Nasal Colonization With Staphylococcus Aureus Among Sibling Contact to Acquisition of Staphylococci From 55* Nasally Colonized Index Babies

<table>
<thead>
<tr>
<th>Prior Sibling Nasal Colonization</th>
<th>Total No. at Risk</th>
<th>Acquired Nursery Strain</th>
<th>Did NOT Acquire Nursery Strain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coagulase-positive staph isolated</td>
<td>65</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>No coagulase-positive staph isolated</td>
<td>100</td>
<td>24</td>
<td>76</td>
</tr>
<tr>
<td>Total</td>
<td>165</td>
<td>25</td>
<td>140</td>
</tr>
</tbody>
</table>

* Includes four infants colonized with 80/81 strain who received antibiotics during nursery stay because of "unclean" delivery.
tic penicillin and streptomycin during their 
nursery stay.

The rate of persistence of colonization 
with strain 502A gradually fell from 96% 
at discharge to 48% at the five-month follow-
up period (Fig 3, Table 7). This relatively 
high persistence rate was in sharp contrast 
to the persistence in colonization noted with 
the 80/81 strain which fell from 95% at 
discharge to 36% by the time the baby was 
two months old. At five months of age only 
1 of 21 infants (5%) initially colonized with 
80/81 was still found to carry this strain. The 
persistence rate with other coagulase-positive 
staphylococci was of the same order as that 
observed with the 502A strain. The differ-
e in persistence of strain 502A and strain 
80/81 at five months of age is significant at 
P<0.001.

Spread Within Households of the 502A 
and 80/81 Strains.—Of the 55 mothers who 
were exposed at home to index infants car-
ying hospital strains of staphylococci, 20 
subsequently acquired a nursery staphylo-
cocal strain on their nasal mucosa (Table 
8). All but one mother who acquired the 
nursery strain of staphylococcus had no co-
agulase-positive staphylococci isolated from 
her nasal mucosa prior to her exposure to an 
index infant. The difference in acquisition 
of a nursery strain of staphylococci as re-
lated to maternal nasal colonization status 
with a coagulase-positive staphylococcus is 
significant at P<0.01.

The same relationship was found among 
siblings of index infants. Of the 25 siblings 
who acquired a staphylococcus from an index 
baby, 24 did not have coagulase-positive 
staphylococci prior to their exposure to the 
index infant (Table 9). The difference in 
acquisition between siblings who were co-
lonized with coagulase-positive staphylococci 
before acquiring a nursery strain and those 
who were not colonized with a coagulase-
positive staphylococcus prior to acquiring a 
nursery strain is significant at P<0.005.

Comment

A highly significant degree of protection 
against Staphylococcus aureus phage type 
80/81 as well as staphylococcal disease was 
obtained by the process of artificial coloniza-
tion of infants' noses and cord stumps with 
strain 502A without any other changes being 
made in the nursery routine. The epidemic 
phage type 80/81 encountered in the present 
study produced lesions of greater severity 
than those observed in the previous epidemics 
where artificial colonization with strain 502A 
was undertaken.3,4

No host factors could be implicated which 
would explain the increased pathogenicity 
of this particular strain of phage type 80/81. 
It is of interest to note that of the 15 lesions 
cultured, 14 were associated with type 80/81 
infection, while no disease could be attributed 
to strain 502A.

Spontaneous spread of strain 502A again 
occurred during this epidemic, despite the 
fact that artificially colonized and noninocu-
lated control infants were physically sepa-
rated. The degree of cross-colonization was 
similar to the spontaneous spread of strain 
502A observed during nonepidemic condi-
tions.1

It seems reasonable to assume that both 
artificial colonization and spontaneous cross-
colonization with strain 502A contributed to 
the decrease in incidence of colonization of 
newborns with hospital strains of coagulase-
positive staphylococci. The ability of strain 
502A to survive and colonize newborns after 
artificial colonization is discontinued does not 
appear to be great. The organism rapidly 
disappeared from the nursery once it was no 
longer being continuously introduced.

Summary

Artificial colonization of the nasal mucosa 
and the umbilicus of newborns with the 
staphylococcal strain 502A interfered with 
colonization at these sites by hospital staphylo-
cocci during a nursery epidemic caused by 
Staphylococcus type 80/81.

In the group of 56 infants infected by 
various staphylococci and followed after dis-
charge from the hospital, 17 lesions were 
encountered in index infants or their house-
hold contacts. The staphylococci isolated 
from 14 were type 80/81. One strain was
nontypable, and two lesions were not cultured. No lesion could be attributed to the 502A strain.

Despite physical separation of the two nursery units under study, 23% of the infants in the control area became spontaneously infected with strain 502A.

Two weeks after artificial colonization of infants was stopped spontaneous colonization of infants with 502A could no longer be detected. The relationship between artificial colonization and the elimination of the 80/81 staphylococcal strain from the nursery is discussed.

At five months of age a striking difference was noted in rates of nasal persistence in infants colonized with various strains of staphylococcus; persistence rates of strain 502A and strain 80/81 were 48% and 5%, respectively.

Colonization of the nasal mucosa with coagulase-positive staphylococci of household members of index infants interfered with subsequent acquisition of staphylococcal strains carried into the household by newborn infants.

Technical assistance was provided by Miss Mildred M. Galton, Mr. Emmett B. Shotts, Miss Anita P. King, Miss Jean Thompson, and Mrs. Gladys H. Reynolds, MS, Epidemiology Branch, Communicable Disease Center, Atlanta, Ga.; Miss Susan Cammack, RN, and Miss Dorothy Dickenson, Louisiana State Health Department.

REFERENCES


