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Invasive Group A Streptococcus Infection among Children, Rural Kenya

Technical Appendix

Table 1. Definitions of clinical syndromes

| Clinical syndrome | Definition |
|---|--|
| Skin, soft tissue | Clinical observation (swelling, erythema, tenderness, redness) and positive GAS isolate from a clinical sample (swab or pus). |
| Bone and joint | Clinical observation (swelling, erythema, tenderness, redness) and/or positive GAS isolate from an aspirate. |
| Necrotizing fasciitis | Rapidly spreading infection of muscle fascia, fat and epidermis leading to necrosis. ³ |
| Severe Pneumonia | Severe pneumonia was defined according to WHO guidelines; cough or difficulty breathing plus at least one of central cyanosis or oxygen saturation <90%, severe respiratory distress, a general danger sign (inability to breastfeed or drink, lethargy or unconsciousness, convulsions), ³⁴ in a child with a positive isolate for GAS from a site of clinical infection. |
| Meningitis | Meningitis was defined by either a positive GAS culture from CSF, or CSF total leukocyte count ≥ 50 cells/ μ l and GAS isolated from another clinical site with signs of clinical infection. ⁵⁷ |
| Bacteremia with no focus | Bacteremia with no focus was defined as a child with a positive GAS culture from blood, and no focus of infection (skin, soft tissue, bone and joint, pneumonia, meningitis, UTI, endocarditis or acute glomerulonephritis). |
| Urinary Tract Infection | Urinary tract infections were clinically defined (frequency or urgency) and the presence of a pure culture of GAS in a mid-stream urine sample. |
| Endocarditis | Documented evidence of a new heart murmur and positive blood culture for GAS |
| Acute glomerulonephritis | Hematuria with red cell casts on microscopy, and proteinuria |
| Streptococcal toxic shock syndrome | Adapted from the Working Group of Severe Streptococcal Infections, ³⁸ as isolation from a sterile site (definite case) plus hypotension (<5th percentile of systolic blood pressure in children) and two or more of the following: renal impairment (creatinine greater than twice the upper limit of normal for age), coagulopathy (platelets <100,000/ $\times 10^6$ /l or evidence of disseminated intravascular coagulation), liver dysfunction (alanine transaminase, aspartate aminotransferase or bilirubin more than twice the upper limit of normal for age), adult respiratory distress syndrome (pulmonary infiltrates and hypoxemia without cardiac failure or generalized edema), generalized erythematous rash that may desquamate or soft tissue necrosis (necrotizing fasciitis, myositis or gangrene). |
| Severe acute malnutrition, SAM (subdivided into wasting or Kwashiorkor) | MUAC <11.0 cm (2 – 6 months) and <11.5cm in children 6 months or older; ⁵⁸ if MUAC was missing a weight for age Z score more than 3 standard deviations from the mean was included and for neonates a weight under 2500g. Kwashiorkor was defined by the presence of SAM with edema and wasting as SAM without edema. |

Table 2. Details of *S. pyogenes* strains isolated from the Kilifi County Hospital (1998-2011) included in phylogenetic analyses

| Name | Year | Patient age category | Specimen type | Clinical presentation | <i>emm</i> sequence type | <i>emm</i> -cluster designation+ | MLST | Genome Sequence Accession no.* |
|-------|------|----------------------|---------------|-------------------------------|--------------------------|----------------------------------|-------|--------------------------------|
| K3525 | 1998 | 2–12 months | blood | sepsis (no localizing source) | EMM55.0 | M55 | ST100 | ERR228579 |
| K3534 | 1998 | 1–4 years | blood | skin, soft tissue | EMM65.0 | E6 | ST716 | ERR439218 |
| K3637 | 1998 | 1–4 years | swab | skin, soft tissue | EMM179.0 | M179 | ST619 | ERR227079 |
| K3573 | 1998 | 0–6 days | blood | sepsis (no localizing source) | EMM116.2 | D4 | ST702 | ERR228576 |
| K3589 | 1998 | 28–60 days | blood | meningitis, pneumonia | EMM8.3 | E4 | ST241 | ERR439219 |
| K3589 | 1998 | 28–60 days | blood | meningitis, pneumonia | EMM8.3 | E4 | ST241 | ERR228640 |
| K3730 | 1998 | 0–6 days | blood | sepsis (no localizing source) | EMM90.5 | E2 | ST708 | ERR228598 |

| Name | Year | Patient age category | Specimen type | Clinical presentation | <i>emm</i> sequence type | <i>emm</i> -cluster designation+ | MLST | Genome Sequence Accession no.* |
|-------|------|----------------------|---------------|---|--------------------------|----------------------------------|-------|--------------------------------|
| K3808 | 1998 | 7–27 days | swab | skin, soft tissue; | EMM95.0 | M95 | ST712 | ERR228655 |
| K3828 | 1998 | 5 years and over | swab | skin, soft tissue; | EMM238.1 | A-C3 | ST713 | ERR228656 |
| K3879 | 1998 | 1–4 years | blood | pneumonia sepsis (no localizing source) | EMM183.2 | E3 | ST714 | ERR228582 |
| K3944 | 1998 | 1–4 years | blood | pneumonia sepsis (no localizing source) | EMM122.0 | M122 | ST200 | ERR228636 |
| K3964 | 1999 | 7–27 days | swab | skin, soft tissue | EMM65.0 | E6 | ST716 | ERR228657 |
| K3997 | 1999 | 7–27 days | swab | skin, soft tissue | EMM65.0 | E6 | ST716 | ERR228658 |
| K4254 | 1999 | 2–12 months | blood | skin, soft tissue | EMM85.1 | E6 | ST774 | ERR227080 |
| K4134 | 1999 | 1–4 years | blood | skin, soft tissue | EMM209.1 | E3 | ST717 | ERR228659 |
| K4263 | 1999 | 1–4 years | swab | skin, soft tissue | EMM230.1 | D4 | ST755 | ERR228661 |
| K4240 | 1999 | 1–4 years | swab | skin, soft tissue; | EMM74.0 | M74 | ST720 | ERR228660 |
| K4350 | 1999 | 28–60 days | blood | pneumonia sepsis (no localizing source) | EMM22.5 | E4 | ST213 | ERR228647 |
| K4656 | 1999 | 7–27 days | swab | skin, soft tissue | EMM92.1 | E2 | ST727 | ERR228662 |
| K4728 | 1999 | 1–4 years | blood | pneumonia | EMM44.0 | E3 | ST178 | ERR228594 |
| K4761 | 1999 | 1–4 years | blood | pneumonia, stss | EMM8.3 | E4 | ST730 | ERR228572 |
| K4819 | 1999 | 2–12 months | swab | skin, soft tissue | EMM230.1 | D4 | ST755 | ERR228663 |
| K4828 | 1999 | 1–4 years | blood | sepsis (no localizing source) | EMM179.0 | M179 | ST619 | ERR228689 |
| K4982 | 1999 | 1–4 years | swab | skin, soft tissue | EMM124.2 | E4 | ST736 | ERR228664 |
| K4973 | 1999 | 7–27 days | blood | skin, soft tissue, pneumonia, stss | EMM25.4 | E3 | ST735 | ERR228585 |
| K4973 | 1999 | 7–27 days | blood | skin, soft tissue, pneumonia, stss | EMM25.4 | E3 | ST735 | ERR228562 |
| K5017 | 1999 | 2–11 months | blood | meningitis, pneumonia | EMM44.0 | E3 | ST178 | ERR228575 |
| K5017 | 1999 | 2–11 months | CSF | meningitis, pneumonia | EMM44.0 | E3 | ST178 | ERR228696 |
| K5086 | 1999 | 0–6 days | blood | sepsis (no localizing source), stss | EMM238.1 | A-C3 | ST713 | ERR228555 |
| K5248 | 1999 | 7–27 days | swab | skin, soft tissue | EMM43.1 | D4 | ST770 | ERR227089 |
| K5192 | 1999 | 1–4 years | blood | sepsis (no localizing source) | EMM147.0 | NT | ST741 | ERR228571 |
| K5460 | 2000 | 0–6 days | swab | skin, soft tissue | EMM11.0 | E6 | ST742 | ERR228665 |
| K5499 | 2000 | 1–4 years | swab | skin, soft tissue | EMM65.5 | E6 | ST215 | ERR439220 |
| K5660 | 2000 | 1–4 years | swab | skin, soft tissue | STG866.1 | NT | ST450 | ERR228668 |
| K5679 | 2000 | 1–4 years | blood | pneumonia | EMM177.0 | E6 | ST743 | ERR228627 |
| K5690 | 2000 | 0–6 days | swab | skin, soft tissue, pneumonia | EMM81.11 | E6 | ST744 | ERR228669 |
| K5698 | 2000 | 1–4 years | swab | skin, soft tissue | EMM109.1 | E4 | ST718 | ERR227067 |
| K5721 | 2000 | 7–27 days | swab | skin, soft tissue | EMM26.3 | M26 | ST745 | ERR439221 |
| K5727 | 2000 | 5 years and over | swab | skin, soft tissue | EMM25.1 | E3 | ST746 | ERR228670 |
| K5797 | 2000 | 0–6 days | swab | skin, soft tissue | EMM77.0 | E4 | ST747 | ERR228673 |
| K5797 | 2000 | 0–6 days | swab | skin, soft tissue | EMM77.0 | E4 | ST747 | ERR227036 |
| K5851 | 2000 | 7–27 days | blood | sepsis (no localizing source) | EMM230.1 | D4 | ST755 | ERR228602 |
| K5965 | 2000 | 1–4 years | swab | skin, soft tissue | EMM147.0 | NT | ST753 | ERR228676 |
| K5898 | 2000 | 0–6 days | swab | skin, soft tissue | EMM209.1 | E3 | ST749 | ERR228674 |
| K5910 | 2000 | 5 years and over | swab | skin, soft tissue | EMM92.1 | E2 | ST750 | ERR228675 |

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|-------|------|----------------------|---------------|-------------------------------------|--------------------------|----------------------------------|-------|--------------------------------|
| K5911 | 2000 | 7–27 days | blood | sepsis (no localizing source) | EMM217.0 | D3 | ST728 | ERR439222 |
| K6085 | 2000 | 5 years and over | swab | skin, soft tissue | EMM8.3 | E4 | ST241 | ERR228680 |
| K6008 | 2000 | 7–27 days | swab | skin, soft tissue | EMM75.1 | E6 | ST751 | ERR228677 |
| K6038 | 2000 | 7–27 days | swab | skin, soft tissue | EMM118.2 | E3 | ST752 | ERR228678 |
| K6048 | 2000 | 7–27 days | swab | skin, soft tissue | EMM147.0 | NT | ST753 | ERR228679 |
| K6099 | 2000 | 0–6 days | swab | skin, soft tissue | EMM77.0 | E4 | ST482 | ERR228681 |
| K6102 | 2000 | 0–6 days | swab | skin, soft tissue | EMM109.1 | E4 | ST718 | ERR227037 |
| K6108 | 2000 | 2–11 months | swab | skin, soft tissue | EMM25.1 | E3 | ST323 | ERR227078 |
| K6222 | 2000 | 7–27 days | blood | skin, soft tissue | EMM70.0 | D4 | ST754 | ERR228630 |
| K6239 | 2000 | 2–11 months | blood | pneumonia, stss | EMM9.0 | E3 | ST740 | ERR439224 |
| K6363 | 2000 | 1–4 years | swab | skin, soft tissue | EMM230.1 | D4 | ST755 | ERR228683 |
| K6428 | 2000 | 1–4 years | swab | skin, soft tissue, pneumonia | EMM97.1 | D5 | ST756 | ERR228684 |
| K6429 | 2000 | 7–27 days | swab | skin, soft tissue | EMM38.1 | M38 | ST757 | ERR439225 |
| K7846 | 2001 | 7–27 days | blood | sepsis (no localizing source, stss) | EMM74.0 | M74 | ST120 | ERR228639 |
| K6613 | 2000 | 1–4 years | blood | skin, soft tissue, pneumonia | EMM218.1 | M218 | ST292 | ERR228702 |
| K6635 | 2000 | 2–11 months | swab | skin, soft tissue | EMM177.0 | E6 | ST758 | ERR227086 |
| K6821 | 2001 | 1–4 years | swab | skin, soft tissue | EMM177.0 | E6 | ST758 | ERR439226 |
| K6847 | 2001 | 0–6 days | swab | skin, soft tissue | EMM65.5 | E6 | ST215 | ERR449324 |
| K6917 | 2001 | 7–27 days | swab | skin, soft tissue | EMM65.5 | E6 | ST215 | ERR228688 |
| K6932 | 2001 | 2–11 months | blood | skin, soft tissue | EMM217.0 | D3 | ST728 | ERR449325 |
| K7024 | 2001 | 0–6 days | swab | skin, soft tissue | EMM18.21 | M18 | ST402 | ERR227092 |
| K7087 | 2001 | 5 years and over | swab | skin, soft tissue | EMM11.0 | E6 | ST742 | ERR227093 |
| K7087 | 2001 | 5 years and over | swab | skin, soft tissue | EMM11.0 | E6 | ST742 | ERR227094 |
| K7113 | 2001 | 5 years and over | swab | skin, soft tissue | EMM11.0 | E6 | ST742 | ERR227095 |
| K7114 | 2001 | 5 years and over | swab | skin, soft tissue | STG866.1 | NT | ST450 | ERR228536 |
| K7175 | 2001 | 1–4 years | blood | sepsis (no localizing source) | EMM165.0 | E1 | ST762 | ERR228563 |
| K7151 | 2001 | 7–27 days | swab | skin, soft tissue, pneumonia | EMM183.2 | E3 | ST761 | ERR228538 |
| K7219 | 2001 | 7–27 days | blood | sepsis (no localizing source) | EMM28.0 | E4 | ST763 | ERR228620 |
| K7275 | 2001 | 7–27 days | swab | skin, soft tissue | STG866.1 | NT | ST450 | ERR449326 |
| K7367 | 2001 | 0–7 days | swab | skin, soft tissue | EMM55.0 | M55 | ST248 | ERR439227 |
| K7393 | 2001 | 1–4 years | blood | skin, soft tissue, pneumonia, stss | EMM63.5 | E6 | ST764 | ERR228629 |
| K7478 | 2001 | 1–4 years | blood | skin, soft tissue | EMM65.5 | E6 | ST215 | ERR449327 |
| K7498 | 2001 | 2–11 months | blood | sepsis (no localizing source) | EMM44.0 | E3 | ST178 | ERR228614 |
| K7541 | 2001 | 1–4 years | swab | skin, soft tissue | EMM81.2 | E6 | ST766 | ERR228533 |
| K7554 | 2001 | 7–28 days | blood | sepsis (no localizing source) | EMM90.5 | E2 | ST708 | ERR228569 |
| K7559 | 2001 | 7–28 days | blood | sepsis (no localizing source) | EMM110.0 | E2 | ST767 | ERR228578 |
| K7829 | 2001 | 5 years and over | swab | skin, soft tissue | EMM186.1 | D4 | ST262 | ERR228526 |

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|--------|------|----------------------|---------------|---|--------------------------|----------------------------------|-------|--------------------------------|
| K7731 | 2001 | 7–28 days | blood | sepsis (no localizing source) | EMM100.2 | D2 | ST773 | ERR228651 |
| K7736 | 2001 | 5 years and over | swab | pneumonia, nephritis, stss, skin source | EMM165.0 | E1 | ST768 | ERR228530 |
| K7736 | 2001 | 5 years and over | blood | pneumonia, nephritis, stss | EMM19.10 | M19 | ST769 | ERR228648 |
| K7908 | 2001 | 5 years and over | swab | skin, soft tissue | EMM65.4 | E6 | ST129 | ERR228527 |
| K7792 | 2001 | 0–6 days | swab | skin, soft tissue, pneumonia | EMM43.1 | D4 | ST770 | ERR228531 |
| K7928 | 2001 | neonate | swab | skin, soft tissue, stss | EMM4.5 | E1 | ST771 | ERR228525 |
| K7928 | 2001 | neonate | swab | skin, soft tissue, stss | EMM4.5 | E1 | ST771 | ERR449328 |
| K8015 | 2001 | 5 years and over | swab | skin, soft tissue | EMM99.5 | M95 | ST781 | ERR228608 |
| K8057 | 2001 | 2–11 months | blood | pneumonia | EMM179.0 | M179 | ST619 | ERR228643 |
| K8396 | 2002 | 7–27 days | blood | sepsis (no localizing source) | EMM89.8 | E4 | ST772 | ERR228612 |
| K8460 | 2002 | 1–4 years | blood | sepsis (no localizing source) | EMM82.5 | E3 | ST257 | ERR228600 |
| K8492 | 2002 | 7–27 days | swab | skin, soft tissue | EMM100.2 | D2 | ST773 | ERR228671 |
| K8543 | 2002 | 2–11 months | blood | skin, soft tissue | EMM85.1 | E6 | ST774 | ERR228641 |
| K8728 | 2002 | 1–4 years | blood | sepsis (no localizing source) | EMM64.3 | D4 | ST223 | ERR228690 |
| K8744 | 2002 | 1–4 years | swab | skin, soft tissue and pneumonia | EMM8.3 | E4 | ST241 | ERR228672 |
| K8861 | 2002 | 7–27 days | blood | skin, soft tissue, stss | EMM44.0 | E3 | ST178 | ERR228588 |
| K8955 | 2002 | 7–27 days | swab | skin, soft tissue | EMM65.0 | E6 | ST778 | ERR228542 |
| K9037 | 2002 | 2–11 months | blood | skin, soft tissue | EMM239.1 | A-C3 | ST776 | ERR228610 |
| K9189 | 2002 | 2–11 months | blood | pneumonia | EMM182.1 | E6 | ST229 | ERR228701 |
| K9215 | 2002 | 28–60 days | blood | meningitis, pneumonia | EMM112.5 | E4 | ST777 | ERR228632 |
| K9333 | 2002 | 5 years and over | swab | skin, soft tissue | EMM90.5 | E2 | ST708 | ERR228544 |
| K9361 | 2002 | 2–11 months | blood | pneumonia | EMM44.0 | E3 | ST178 | ERR228699 |
| K9374 | 2002 | 28–60 days | swab | skin, soft tissue | EMM18.21 | M18 | ST221 | ERR449329 |
| K9400 | 2002 | 1–4 years | blood | skin, soft tissue | EMM90.5 | E2 | ST708 | ERR449330 |
| K9404 | 2002 | 1–4 years | blood | sepsis (no localizing source) | EMM90.5 | E2 | ST708 | ERR439229 |
| K9408 | 2002 | 2–11 months | swab | skin, soft tissue | EMM65.0 | E6 | ST778 | ERR228551 |
| K9429 | 2002 | 2–11 months | blood | pneumonia, stss | EMM95.0 | E2 | ST712 | ERR439230 |
| K9440 | 2002 | 28–60 days | blood | sepsis (no localizing source) | EMM99.5 | E6 | ST779 | ERR228559 |
| K9454 | 2002 | 2–11 months | blood | skin, soft tissue, stss | EMM50.3 | E2 | ST217 | ERR228605 |
| K37914 | 2009 | 5 years and over | urine | urinary tract infection | EMM119.2 | D4 | ST239 | ERR228593 |
| K9466 | 2002 | 2–11 months | blood | pneumonia | EMM78.5 | E1 | ST255 | ERR439231 |
| K9521 | 2002 | 1–4 years | blood | pneumonia | EMM84.1 | E4 | ST780 | ERR228626 |
| K9612 | 2002 | 1–4 years | blood | pneumonia | EMM99.5 | E6 | ST781 | ERR228606 |

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|--------|------|----------------------|---------------|---------------------------------|--------------------------|----------------------------------|-------|--------------------------------|
| K9612 | 2002 | 1-4 years | blood | pneumonia | EMM99.5 | E6 | ST781 | ERR228642 |
| K9679 | 2002 | 2-11 months | blood | pneumonia | EMM112.5 | E4 | ST777 | ERR228596 |
| K10040 | 2003 | 5 years and over | swab | skin, soft tissue | EMM22.5 | E4 | ST213 | ERR228552 |
| K10105 | 2003 | 5 years and over | swab | skin, soft tissue | EMM22.5 | E4 | ST213 | ERR228553 |
| K9887 | 2003 | 1-4 years | blood | skin, soft tissue | EMM119.2 | D4 | ST239 | ERR449331 |
| K9927 | 2003 | 1-4 years | swab | skin, soft tissue | EMM223.0 | D4 | ST613 | ERR449332 |
| K10016 | 2003 | 2-11 months | swab | skin, soft tissue and pneumonia | EMM103.0 | E3 | ST233 | ERR228546 |
| K10021 | 2003 | 5 years and over | swab | skin, soft tissue | EMM103.0 | E3 | ST233 | ERR228547 |
| K10167 | 2003 | 28-60 days | blood | pneumonia | EMM98.3 | D4 | ST136 | ERR228625 |
| K10213 | 2003 | 2-11 months | swab | skin, soft tissue | EMM169.1 | E4 | ST238 | ERR228654 |
| K10234 | 2003 | 2-11 months | blood | skin, soft tissue and pneumonia | EMM65.5 | E6 | ST215 | ERR449333 |
| K10238 | 2003 | 1-4 years | blood | nephritis | EMM218.1 | M218 | ST292 | ERR228558 |
| K10246 | 2003 | 1-4 years | swab | skin, soft tissue and pneumonia | EMM162.1 | NT | ST412 | ERR449334 |
| K10311 | 2003 | 2-11 months | blood | skin, soft tissue | EMM50.3 | E2 | ST217 | ERR228637 |
| K10332 | 2003 | 7-28 days | swab | skin, soft tissue | EMM183.2 | E3 | ST761 | ERR228480 |
| K9340 | 2002 | 1-4 years | swab | skin, soft tissue | EMM18.21 | M18 | ST221 | ERR439228 |
| K10378 | 2003 | 2-11 months | blood | skin, soft tissue and pneumonia | EMM50.3 | E2 | ST217 | ERR228599 |
| K10474 | 2003 | 5 years and over | swab | skin, soft tissue | EMM118.2 | E3 | ST752 | ERR228481 |
| K10514 | 2003 | 2-11 months | blood | sepsis (no localizing source) | EMM77.0 | E4 | ST218 | ERR228697 |
| K10586 | 2003 | 1-4 years | swab | skin, soft tissue | EMM50.3 | E2 | ST217 | ERR228482 |
| K10676 | 2003 | 7-27 days | blood | sepsis (no localizing source) | EMM103.0 | E3 | ST233 | ERR228623 |
| K10697 | 2003 | 7-27 days | blood | sepsis (no localizing source) | EMM18.21 | M18 | ST221 | ERR228570 |
| K10712 | 2003 | 1-4 years | blood | skin, soft tissue | EMM183.2 | E3 | ST219 | ERR228554 |
| K10722 | 2003 | 2-11 months | swab | skin, soft tissue | EMM22.5 | E4 | ST213 | ERR228483 |
| K10812 | 2003 | 2-11 months | blood | pneumonia | EMM82.5 | E4 | ST257 | ERR228638 |
| K10987 | 2003 | 2-11 months | blood | pneumonia | EMM230.1 | D4 | ST755 | ERR228557 |
| K11116 | 2003 | 2-11 months | swab | skin, soft tissue | EMM18.21 | M18 | ST402 | ERR228484 |
| K11239 | 2003 | 1-4 years | swab | skin, soft tissue | EMM169.1 | E4 | ST238 | ERR228485 |
| K11243 | 2003 | 1-4 years | swab | skin, soft tissue | EMM114.5 | E4 | ST220 | ERR228486 |
| K11254 | 2003 | 0-6 days | blood | sepsis (no localizing source) | EMM18.21 | M18 | ST221 | ERR228644 |
| K11271 | 2003 | 1-4 years | blood | pneumonia | EMM25.4 | E3 | ST222 | ERR228645 |
| K11319 | 2003 | 1-4 years | swab | skin, soft tissue | EMM64.3 | D4 | ST223 | ERR228487 |
| K11464 | 2003 | 5 years and over | swab | skin, soft tissue | EMM99.5 | E6 | ST781 | ERR228450 |
| K11814 | 2004 | 5 years and over | swab | skin, soft tissue | EMM169.1 | E4 | ST226 | ERR228451 |
| K11898 | 2004 | 1-4 years | swab | skin, soft tissue | EMM111.2 | M111 | ST737 | ERR227053 |
| K12183 | 2004 | 7-27 days | blood | skin, soft tissue | EMM124.2 | E4 | ST231 | ERR228590 |
| K12363 | 2004 | 1-4 years | blood | skin, soft tissue | EMM79.5 | E3 | ST714 | ERR439232 |
| K12434 | 2004 | 5 years and over | swab | skin, soft tissue | EMM44.0 | E3 | ST178 | ERR227050 |
| K12452 | 2004 | 5 years and over | blood | skin, soft tissue | EMM183.2 | E3 | ST761 | ERR439233 |

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|--------|------|----------------------|---------------|---|--------------------------|----------------------------------|-------|--------------------------------|
| K12473 | 2004 | 2-11 months | blood | skin, soft tissue | EMM55.0 | M55 | ST232 | ERR227087 |
| K13484 | 2004 | 0-6 days | blood | pneumonia | EMM119.2 | D4 | ST239 | ERR228609 |
| K12537 | 2004 | 1-6 months | CSF | pneumonia meningitis, | EMM103.0 | E3 | ST233 | ERR449335 |
| K12537 | 2004 | 1-6 months | blood | pneumonia meningitis, | EMM103.0 | E3 | ST233 | ERR228693 |
| K12554 | 2004 | 5 years and over | blood | pneumonia sepsis (no localizing source) | EMM44.0 | E3 | ST178 | ERR228635 |
| K12614 | 2004 | 5 years and over | blood | skin, soft tissue | EMM179.0 | M179 | ST619 | ERR228698 |
| K12669 | 2004 | 7-27 days | blood | pneumonia | EMM183.2 | E3 | ST234 | ERR228601 |
| K13045 | 2004 | 2-11 months | blood | pneumonia | EMM192.0 | D4 | ST261 | ERR228589 |
| K13065 | 2004 | 5 years and over | swab | skin, soft tissue | EMM75.1 | E6 | ST578 | ERR228488 |
| K13107 | 2004 | 1-4 years | swab | skin, soft tissue | EMM183.2 | E3 | ST219 | ERR228489 |
| K13179 | 2004 | 7-28 days | blood | skin, soft tissue | STG7882.3 | NT | ST235 | ERR228691 |
| K13190 | 2004 | 5 years and over | swab | skin, soft tissue | EMM39.4 | A-C4 | ST236 | ERR228490 |
| K13254 | 2004 | 1-4 years | blood | skin, soft tissue | EMM63.5 | E6 | ST764 | ERR449336 |
| K13372 | 2004 | 7-28 days | swab | skin, soft tissue, and pneumonia | EMM81.2 | E6 | ST766 | ERR228491 |
| K13389 | 2004 | 0-6 days | blood | sepsis (no localizing source) | EMM169.1 | E4 | ST238 | ERR228667 |
| K13389 | 2004 | 0-6 days | blood | sepsis (no localizing source) | EMM169.1 | E4 | ST238 | ERR228700 |
| K16898 | 2005 | 1-4 years | blood | skin, soft tissue | EMM112.5 | E4 | ST246 | ERR227090 |
| K13569 | 2004 | 2-11 months | blood | sepsis (no localizing source) | EMM63.5 | E6 | ST764 | ERR439234 |
| K13994 | 2005 | 2-11 months | blood | skin, soft tissue | EMM77.0 | E4 | ST747 | ERR227056 |
| K14810 | 2005 | 0-6 days | blood | skin, soft tissue | EMM18.21 | M18 | ST402 | ERR228652 |
| K16544 | 2005 | 5 years and over | swab | skin, soft tissue | EMM11.0 | E6 | ST250 | ERR227057 |
| K16587 | 2005 | 2-11 months | swab | skin, soft tissue | STG866.1 | NT | ST450 | ERR439235 |
| K16727 | 2005 | 1-4 years | swab | skin, soft tissue | EMM65.0 | E6 | ST778 | ERR227003 |
| K16738 | 2005 | 7-27 days | blood | sepsis (no localizing source) | EMM64.3 | D4 | ST223 | ERR228577 |
| K16772 | 2005 | 7-27 days | blood | sepsis (no localizing source) | EMM89.8 | E4 | ST245 | ERR228574 |
| K16781 | 2005 | 7-27 days | swab | skin, soft tissue | STG866.1 | NT | ST450 | ERR227054 |
| K16837 | 2005 | 1-4 years | swab | skin, soft tissue | EMM83.12 | D4 | ST393 | ERR227055 |
| K16849 | 2005 | 7-27 days | blood | sepsis (no localizing source) | EMM83.12 | D4 | ST393 | ERR439236 |
| K17011 | 2005 | 1-4 years | blood | skin, soft tissue | EMM79.5 | E3 | ST714 | ERR449337 |
| K17074 | 2005 | 5 years and over | swab | skin, soft tissue | EMM218.1 | M218 | ST292 | ERR449338 |
| K17097 | 2005 | 7-27 days | blood | pneumonia | EMM223.0 | D4 | ST536 | ERR228631 |
| K17300 | 2005 | 1-4 years | swab | skin, soft tissue | STG866.1 | NT | ST450 | ERR228453 |
| K17276 | 2005 | 1-4 years | swab | skin, soft tissue | EMM92.0 | E2 | ST674 | ERR228493 |
| K17494 | 2005 | 2-11 months | blood | skin, soft tissue | EMM55.0 | M55 | ST248 | ERR228561 |
| K17716 | 2005 | 2-11 months | swab | skin, soft tissue and pneumonia | EMM19.10 | M19 | ST769 | ERR228452 |
| K17786 | 2006 | 28-60 days | blood | meningitis | EMM11.0 | E6 | ST251 | ERR228597 |
| K17786 | 2006 | 1-6 months | CSF | meningitis | EMM11.0 | E6 | ST250 | ERR228584 |
| K18724 | 2006 | 0-6 days | blood | pneumonia | EMM11.0 | E6 | ST250 | ERR228568 |

| Name | Year | Patient age category | Specimen type | Clinical presentation | <i>emm</i> sequence type | <i>emm</i> -cluster designation+ | MLST | Genome Sequence Accession no.* |
|--------|------|----------------------|---------------|-------------------------------------|--------------------------|----------------------------------|-------|--------------------------------|
| K19912 | 2006 | 5 years and over | swab | skin, soft tissue | EMM92.0 | E2 | ST674 | ERR228509 |
| K19083 | 2006 | 1-4 years | swab | skin, soft tissue | EMM56.0 | D4 | ST115 | ERR227065 |
| K19219 | 2006 | 1-4 years | swab | skin, soft tissue | EMM124.2 | E4 | ST231 | ERR228454 |
| K19188 | 2006 | 2-11 months | blood | skin, soft tissue | EMM8.3 | E4 | ST505 | ERR449339 |
| K19347 | 2006 | 5 years and over | swab | skin, soft tissue | stg1750.0 | NT | ST258 | ERR228503 |
| K19376 | 2006 | 1-4 years | swab | skin, soft tissue | EMM75.1 | E6 | ST578 | ERR228505 |
| K19417 | 2006 | 5 years and over | swab | skin, soft tissue | EMM122.0 | M122 | ST200 | ERR228522 |
| K19464 | 2006 | 1-4 years | blood | skin, soft tissue and pneumonia | stg653.1 | NT | ST254 | ERR439237 |
| K19639 | 2006 | 5 years and over | blood | endocarditis | EMM111.1 | M111 | ST496 | ERR228560 |
| K19669 | 2006 | 1-4 years | swab | skin, soft tissue | stg1750.0 | NT | ST258 | ERR228506 |
| K19873 | 2006 | 7-27 days | CSF | meningitis, pneumonia | EMM78.5 | E1 | ST255 | ERR228583 |
| K19875 | 2006 | 7-27 days | swab | skin, soft tissue | EMM111.2 | M111 | ST256 | ERR228508 |
| K19952 | 2006 | 5 years and over | swab | skin, soft tissue, bone and joint | EMM92.0 | E2 | ST674 | ERR228510 |
| K19952 | 2006 | 5 years and over | swab | skin, soft tissue, bone and joint | EMM92.0 | E2 | ST674 | ERR228511 |
| K19961 | 2006 | 28-60 days | blood | pneumonia | EMM82.5 | E3 | ST257 | ERR228615 |
| K20001 | 2006 | 2-11 months | blood | sepsis (no localizing source) | EMM77.0 | E4 | ST747 | ERR228611 |
| K20201 | 2006 | 1-4 years | swab | skin, soft tissue | EMM44.0 | E3 | ST178 | ERR228512 |
| K22338 | 2006 | 5 years and over | swab | skin, soft tissue | STG866.1 | NT | ST450 | ERR227058 |
| K20641 | 2006 | 2-11 months | swab | skin, soft tissue | EMM80.0 | D4 | ST701 | ERR228472 |
| K20653 | 2007 | 5 years and over | swab | skin, soft tissue | EMM209.0 | E3 | ST260 | ERR228473 |
| K20747 | 2007 | 1-4 years | swab | skin, soft tissue | EMM84.1 | E4 | ST259 | ERR228476 |
| K20746 | 2007 | 0-6 days | swab | skin, soft tissue | EMM97.1 | D5 | ST283 | ERR228475 |
| K20882 | 2007 | 5 years and over | swab | skin, soft tissue, bone and joint | EMM209.0 | E3 | ST260 | ERR228477 |
| K22813 | 2007 | 5 years and over | swab | skin, soft tissue and pneumonia | EMM121.0 | D4 | ST262 | ERR227061 |
| K20910 | 2007 | 0-6 days | swab | skin, soft tissue and pneumonia | EMM9.0 | E3 | ST447 | ERR228478 |
| K21246 | 2007 | 2-11 months | swab | skin, soft tissue | EMM77.0 | E4 | ST747 | ERR228479 |
| K21345 | 2007 | 28-60 days | swab | skin, soft tissue | STG866.1 | NT | ST265 | ERR227005 |
| K21633 | 2007 | 28-60 days | blood | sepsis (no localizing source) | EMM15.1 | E3 | ST266 | ERR228618 |
| K21710 | 2007 | 0-6 days | swab | skin, soft tissue and pneumonia | EMM109.1 | E4 | ST718 | ERR227064 |
| K21771 | 2007 | 7-27 days | blood | sepsis (no localizing source), stss | EMM60.7 | E1 | ST700 | ERR449341 |
| K22633 | 2007 | 2-11 months | swab | skin, soft tissue | EMM89.8 | E4 | ST772 | ERR227059 |
| K22757 | 2007 | 1-4 years | swab | skin, soft tissue and pneumonia | EMM83.12 | D4 | ST393 | ERR227060 |
| K23180 | 2007 | 1-4 years | swab | skin, soft tissue | EMM44.0 | E3 | ST178 | ERR227062 |
| K23182 | 2007 | 1-4 years | blood | pneumonia | EMM63.5 | E6 | ST274 | ERR228695 |
| K23323 | 2007 | 1-4 years | swab | skin, soft tissue | EMM84.1 | E4 | ST259 | ERR227063 |
| K24357 | 2007 | 1-4 years | swab | skin, soft tissue | EMM209.0 | E3 | ST260 | ERR439238 |
| K23653 | 2007 | 1-4 years | swab | skin, soft tissue | EMM8.3 | E4 | ST241 | ERR227004 |
| K23617 | 2007 | 1-4 years | swab | skin, soft tissue | EMM48.0 | E6 | ST278 | ERR227076 |
| K23685 | 2007 | 2-11 months | swab | skin, soft tissue and pneumonia | EMM79.5 | E3 | ST714 | ERR228494 |
| K23745 | 2007 | 1-4 years | swab | skin, soft tissue | EMM60.7 | E1 | ST279 | ERR228495 |

| Name | Year | Patient age category | Specimen type | Clinical presentation | <i>emm</i> sequence type | <i>emm</i> -cluster designation+ | MLST | Genome Sequence Accession no.* |
|--------|------|----------------------|---------------|-----------------------------------|--------------------------|----------------------------------|-------|--------------------------------|
| K23866 | 2007 | 1–4 years | swab | skin, soft tissue and pneumonia | EMM82.5 | E3 | ST257 | ERR228496 |
| K23799 | 2007 | 5 years and over | swab | skin, soft tissue, bone and joint | EMM124.2 | E4 | ST280 | ERR227007 |
| K23890 | 2007 | 5 years and over | swab | skin, soft tissue | EMM97.1 | D5 | ST283 | ERR228497 |
| K24525 | 2007 | 5 years and over | swab | skin, soft tissue | EMM11.0 | E6 | ST404 | ERR228501 |
| K24190 | 2007 | 5 years and over | swab | skin, soft tissue | EMM28.0 | E4 | ST763 | ERR228499 |
| K24146 | 2007 | 1–4 years | swab | skin, soft tissue | EMM165.0 | E1 | ST768 | ERR228498 |
| K24601 | 2007 | 1–4 years | swab | skin, soft tissue | EMM89.8 | E4 | ST772 | ERR228456 |
| K24635 | 2007 | 1–4 years | swab | skin, soft tissue | EMM44.0 | E3 | ST178 | ERR228457 |
| K25147 | 2007 | 7–28 days | blood | pneumonia | EMM90.5 | E2 | ST708 | ERR227051 |
| K25325 | 2007 | 7–28 days | blood | pneumonia | EMM90.5 | E2 | ST708 | ERR227073 |
| K25713 | 2007 | 1–4 years | swab | skin, soft tissue | EMM124.2 | E4 | ST280 | ERR228458 |
| K26504 | 2007 | 5 years and over | swab | skin, soft tissue | EMM44.0 | E3 | ST178 | ERR228459 |
| K27345 | 2007 | 1–4 years | swab | skin, soft tissue | STG866.1 | NT | ST450 | ERR227032 |
| K27345 | 2007 | 1–4 years | swab | skin, soft tissue | STG866.1 | NT | ST450 | ERR228520 |
| K28044 | 2007 | 2–11 months | blood | pneumonia | EMM25.1 | E3 | ST323 | ERR228521 |
| K28044 | 2007 | 2–11 months | blood | pneumonia | EMM25.1 | E3 | ST323 | ERR227033 |
| K28162 | 2007 | 5 years and over | swab | skin, soft tissue | EMM83.12 | D4 | ST393 | ERR228460 |
| K29166 | 2008 | 1–4 years | blood | skin, soft tissue | EMM162.1 | NT | ST412 | ERR228461 |
| K29527 | 2008 | 5 years and over | swab | skin, soft tissue | EMM4.5 | E1 | ST771 | ERR228462 |
| K29655 | 2008 | 5 years and over | swab | skin, soft tissue | EMM53.4 | D4 | ST460 | ERR228463 |
| K29743 | 2008 | 7–27 days | blood | pneumonia | EMM114.5 | E4 | ST220 | ERR228464 |
| K30067 | 2008 | 2–11 months | swab | skin, soft tissue | EMM73.0 | E4 | ST469 | ERR228465 |
| K30465 | 2008 | 2–11 months | swab | skin, soft tissue and pneumonia | EMM8.3 | E4 | ST505 | ERR227030 |
| K31028 | 2008 | 1–4 years | swab | skin, soft tissue | EMM93.6 | D4 | ST583 | ERR228518 |
| K31028 | 2008 | 1–4 years | swab | skin, soft tissue | EMM93.6 | D4 | ST613 | ERR227052 |
| K31063 | 2008 | 2–11 months | blood | skin, soft tissue and pneumonia | EMM209.0 | E3 | ST260 | ERR228466 |
| K38591 | 2009 | 5 years and over | swab | skin, soft tissue | EMM124.2 | E4 | ST231 | ERR228441 |
| K31539 | 2008 | 2–11 months | blood | sepsis (no localizing source) | EMM238.1 | A-C3 | ST713 | ERR228467 |
| K31611 | 2008 | 1–4 years | swab | skin, soft tissue | EMM93.6 | D4 | ST613 | ERR228468 |
| K32502 | 2008 | 2–11 months | swab | skin, soft tissue | EMM165.0 | E1 | ST768 | ERR228469 |
| K33951 | 2008 | 1–4 years | swab | skin, soft tissue | EMM80.0 | D4 | ST701 | ERR228432 |
| K33560 | 2008 | neonate | CSF | skin, soft tissue and meningitis | EMM179.0 | M179 | ST619 | ERR228470 |
| K33560 | 2008 | neonate | CSF | skin, soft tissue and meningitis | EMM179.0 | M179 | ST619 | ERR228471 |
| K33937 | 2008 | 1–4 years | swab | skin, soft tissue | EMM60.7 | E1 | ST700 | ERR228429 |
| K33937 | 2008 | 1–4 years | swab | skin, soft tissue | EMM60.7 | E1 | ST700 | ERR228431 |
| K33983 | 2008 | 0–6 days | swab | skin, soft tissue | EMM30.15 | A-C2 | ST537 | ERR228433 |
| K35129 | 2008 | 1–4 years | swab | skin, soft tissue | stg1750.0 | NT | ST258 | ERR228519 |
| K35215 | 2008 | 5 years and over | swab | skin, soft tissue | STG866.1 | NT | ST450 | ERR439239 |
| K35215 | 2008 | 5 years and over | swab | skin, soft tissue | STG866.1 | NT | ST450 | ERR228516 |
| K35870 | 2008 | 5 years and over | swab | skin, soft tissue | EMM229.0 | A-C4 | ST703 | ERR228434 |
| K35909 | 2009 | 1–4 years | swab | skin, soft tissue | EMM75.1 | E6 | ST704 | ERR228435 |
| K36067 | 2009 | 1–4 years | aspirate | skin, soft tissue, bone and joint | EMM85.1 | E6 | ST774 | ERR228436 |
| K36294 | 2009 | 1–4 years | swab | skin, soft tissue | EMM49.9 | E3 | ST705 | ERR228448 |

| Name | Year | Patient age category | Specimen type | Clinical presentation | <i>emm</i> sequence type | <i>emm</i> -cluster designation+ | MLST | Genome Sequence Accession no.* |
|--------|------|----------------------|---------------|-----------------------------------|--------------------------|----------------------------------|-------|--------------------------------|
| K36347 | 2009 | 7–28 days | swab | skin, soft tissue | EMM65.0 | E6 | ST716 | ERR228449 |
| K36395 | 2009 | 1–4 years | swab | skin, soft tissue | EMM81.2 | E6 | ST766 | ERR228514 |
| K36535 | 2009 | 2–11 months | swab | skin, soft tissue and pneumonia | EMM100.2 | D2 | ST773 | ERR227034 |
| K36563 | 2009 | 2–11 months | blood | skin, soft tissue and pneumonia | EMM229.0 | A-C4 | ST703 | ERR449343 |
| K37164 | 2009 | 7–27 days | swab | skin, soft tissue | EMM224.1 | D4 | ST707 | ERR228439 |
| K37164 | 2009 | 7–27 days | swab | skin, soft tissue | EMM224.1 | D4 | ST707 | ERR228446 |
| K37287 | 2009 | 5 years and over | swab | skin, soft tissue | EMM55.0 | M55 | ST248 | ERR228447 |
| K37990 | 2009 | 2–11 months | blood | meningitis, pneumonia | EMM64.3 | D4 | ST223 | ERR227010 |
| K37990 | 2009 | 12–60 months | CSF | meningitis, pneumonia | EMM64.3 | D4 | ST223 | ERR227011 |
| K37698 | 2009 | 28–60 days | CSF | meningitis | EMM85.1 | E6 | ST709 | ERR227027 |
| K37698 | 2009 | 28–60 days | blood | meningitis | EMM85.1 | E6 | ST774 | ERR227026 |
| K37741 | 2009 | 7–27 days | blood | skin, soft tissue and pneumonia | EMM239.1 | A-C3 | ST776 | ERR227035 |
| K38181 | 2009 | 1–4 years | swab | skin, soft tissue | EMM56.0 | D4 | ST115 | ERR227072 |
| K38470 | 2009 | 5 years and over | swab | skin, soft tissue | EMM18.21 | M18 | ST402 | ERR449344 |
| K39244 | 2009 | 28–60 days | swab | skin, soft tissue and pneumonia | EMM80.0 | D4 | ST715 | ERR439240 |
| K40810 | 2010 | 2–11 months | swab | skin, soft tissue and pneumonia | EMM93.0 | D4 | ST10 | ERR227074 |
| K40818 | 2010 | 2–11 months | blood | skin, soft tissue and pneumonia | EMM112.5 | E4 | ST777 | ERR227009 |
| K41947 | 2010 | 1–4 years | swab | skin, soft tissue | EMM109.1 | E4 | ST718 | ERR227075 |
| K41948 | 2010 | 5 years and over | aspirate | skin, soft tissue, bone and joint | EMM208.0 | D4 | ST719 | ERR228444 |
| K42600 | 2010 | 1–4 years | swab | skin, soft tissue | EMM42.3 | E6 | ST721 | ERR228445 |
| K42771 | 2010 | 7–28 days | blood | pneumonia | EMM124.2 | E4 | ST231 | ERR227015 |
| K42952 | 2010 | 5 years and over | swab | skin, soft tissue | EMM111.2 | M111 | ST737 | ERR449345 |
| K43037 | 2010 | 1–4 years | blood | pneumonia | EMM44.0 | E3 | ST178 | ERR449346 |
| K43101 | 2010 | 1–4 years | aspirate | skin, soft tissue, bone and joint | EMM55.0 | M55 | ST248 | ERR227044 |
| K43304 | 2010 | 5 years and over | aspirate | skin, soft tissue, bone and joint | EMM18.21 | M18 | ST402 | ERR227045 |
| K44098 | 2010 | 5 years and over | blood | skin, soft tissue | EMM18.21 | M18 | ST402 | ERR227042 |
| K44582 | 2010 | 5 years and over | swab | skin, soft tissue | EMM57.0 | M57 | ST723 | ERR227043 |
| K44869 | 2010 | 5 years and over | swab | skin, soft tissue, bone and joint | STG866.1 | NT | ST450 | ERR227040 |
| K44896 | 2010 | 5 years and over | blood | bone and joint | EMM99.5 | E6 | ST781 | ERR227041 |
| K45527 | 2010 | 1–4 years | blood | skin, soft tissue | EMM192.0 | D4 | ST724 | ERR227038 |
| K45900 | 2010 | 1–4 years | swab | skin, soft tissue | EMM118.2 | E3 | ST725 | ERR227039 |
| K46187 | 2010 | 5 years and over | swab | skin, soft tissue | EMM68.8 | E2 | ST726 | ERR227024 |
| K47020 | 2011 | 5 years and over | aspirate | skin, soft tissue, bone and joint | EMM80.0 | D4 | ST701 | ERR227025 |
| K47118 | 2011 | 1–4 years | swab | skin, soft tissue | EMM217.0 | D3 | ST728 | ERR227022 |
| K47483 | 2011 | 1–4 years | swab | skin, soft tissue | EMM225.0 | D4 | ST262 | ERR439241 |
| K47581 | 2011 | 1–4 years | swab | skin, soft tissue | EMM80.0 | D4 | ST729 | ERR227020 |
| K48083 | 2011 | 5 years and over | swab | skin, soft tissue | EMM179.0 | M179 | ST619 | ERR227021 |
| K48186 | 2011 | 1–4 years | swab | skin, soft tissue | stg1750.0 | NT | ST731 | ERR227018 |
| K48650 | 2011 | 5 years and over | swab | skin, soft tissue | EMM44.0 | E3 | ST178 | ERR227019 |
| K48817 | 2011 | 1–4 years | blood | sepsis (no localizing source) | EMM74.0 | M74 | ST120 | ERR227049 |
| K48807 | 2011 | 5 years and over | blood | necrotising fasciitis | EMM75.1 | E6 | ST704 | ERR227048 |

| Name | Year | Patient age category | Specimen type | Clinical presentation | <i>emm</i> sequence type | <i>emm</i> -cluster designation+ | MLST | Genome Sequence Accession no.* |
|--------|------|----------------------|---------------|-----------------------------------|--------------------------|----------------------------------|-------|--------------------------------|
| K48877 | 2011 | 1–4 years | aspirate | skin, soft tissue, bone and joint | EMM74.0 | M74 | ST732 | ERR227046 |
| K49294 | 2011 | 1–4 years | swab | skin, soft tissue | EMM90.5 | E2 | ST734 | ERR227068 |
| K49285 | 2011 | 5 years and over | swab | skin, soft tissue, bone and joint | EMM103.0 | E3 | ST733 | ERR227047 |
| K49551 | 2011 | 7–27 days | blood | pneumonia | EMM44.0 | E3 | ST178 | ERR227069 |
| K49882 | 2011 | 5 years and over | swab | skin, soft tissue, bone and joint | EMM111.2 | M111 | ST737 | ERR227066 |
| K50105 | 2011 | 1–4 years | swab | skin, soft tissue | EMM22.5 | E4 | ST213 | ERR228517 |
| K50105 | 2011 | 1–4 years | swab | skin, soft tissue | EMM22.5 | E4 | ST213 | ERR227029 |
| K50316 | 2011 | 1–4 years | swab | skin, soft tissue | EMM64.3 | D4 | ST223 | ERR228523 |
| K50593 | 2011 | 0–6 days | blood | pneumonia | EMM9.0 | E3 | ST740 | ERR228507 |
| K50658 | 2011 | 5 years and over | aspirate | skin, soft tissue, bone and joint | EMM9.0 | E3 | ST740 | ERR228455 |
| K50977 | 2011 | 5 years and over | blood | sepsis (no localizing source) | EMM179.0 | M179 | ST619 | ERR449347 |
| K51725 | 2011 | 1–4 years | swab | skin, soft tissue | EMM18.21 | M18 | ST402 | ERR439242 |

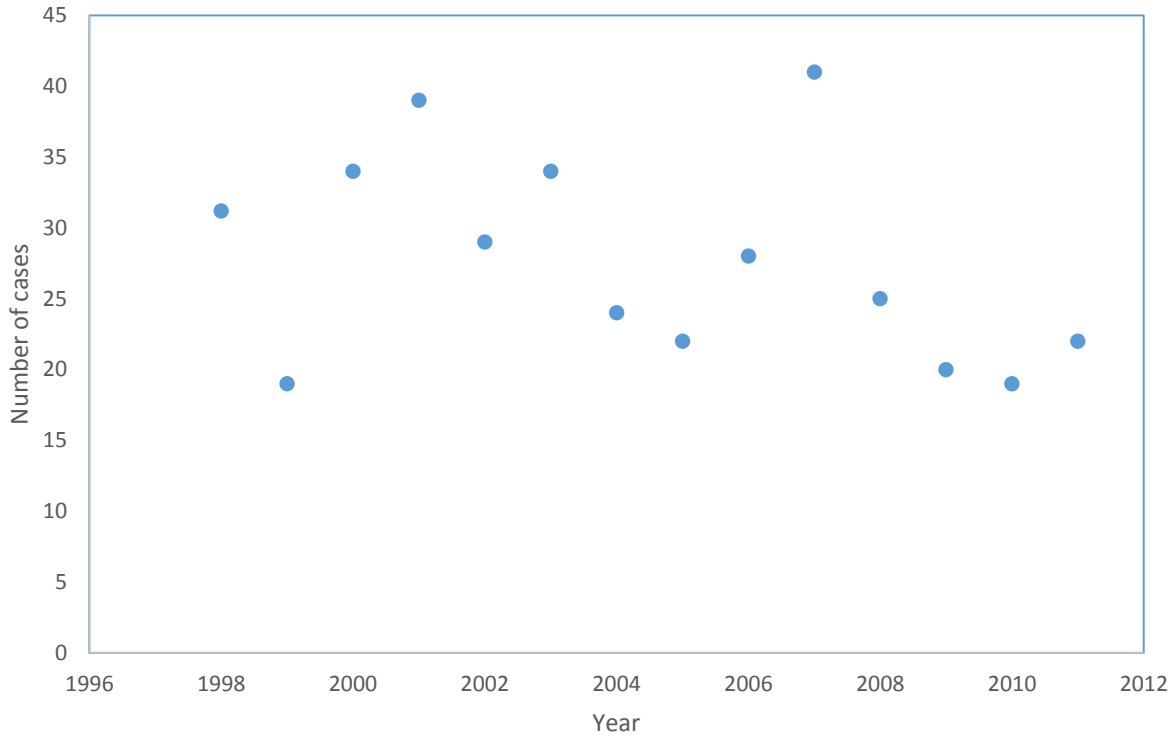
*Short read sequence data available from the European Nucleotide Archive <http://www.ebi.ac.uk/ena/>

+NT: Non-typeable

Table 3. *emm*-clusters in children admitted to Kilifi County Hospital (1998-2011)

| <i>emm</i> -cluster | N | % |
|---------------------|-----|------|
| E3 | 58 | 16.2 |
| E4 | 56 | 15.7 |
| E6 | 57 | 16.0 |
| D4 | 51 | 14.3 |
| NT* | 26 | 7.3 |
| E2 | 25 | 7.0 |
| E1 | 16 | 4.5 |
| M18 | 12 | 3.4 |
| M179 | 9 | 2.5 |
| M55 | 6 | 1.7 |
| A-C3 | 5 | 1.4 |
| M111 | 5 | 1.4 |
| M74 | 4 | 1.1 |
| A-C4 | 3 | 0.8 |
| D2 | 5 | 1.4 |
| D3 | 3 | 0.8 |
| D5 | 3 | 0.8 |
| M218 | 3 | 0.8 |
| M122 | 2 | 0.6 |
| M19 | 2 | 0.6 |
| M95 | 2 | 0.6 |
| A-C2 | 1 | 0.3 |
| M26 | 1 | 0.3 |
| M38 | 1 | 0.3 |
| M57 | 1 | 0.3 |
| Total | 357 | 100 |

*NT stands for nontypeable



Technical Appendix Figure 1. Invasive group A *Streptococcus* cases in children admitted to Kilifi County Hospital, Kenya, during 1998–2011.

