Regional Perinatal Care:

What do we call the components?

Lillian R. Blackmon, MD

Perinatal Regionalization Meeting
October 28, 2009
Washington, DC
Regionalization

What?
Organization of health care resources and delivery within a defined geographic area

Why?
To provide risk appropriate care to a total population to achieve the best outcomes in the most cost efficient manner

How?
Voluntary, regulation, market forces
1965  Regional Medical Programs in US
   **Cancer, Stroke, Heart Disease**

1966  Prevention of Rh Isoimmunization
   Chown, Manitoba Province

1970  Proposed for Perinatal Health Care
   Silverman, Swyer

1971  AMA House of Delegates Statement
   Centralized Community or Regionalized Perinatal Intensive Care

1973  66th Ross Conference
   Regionalization of Perinatal Care
History of Newborn Services: Concepts and Standards

AAP Committee on Fetus and Newborn
- 1948-77 Hospital Care of Newborns
- 1980 Level II Units
- 2004 Levels of Newborn Care

Committee on Perinatal Health
- 1976 Toward Improving the Outcome of Pregnancy I
- 1993 Toward Improving the Outcome of Pregnancy II

AAP COFN & ACOG CoOP
- 1983-2007 Guidelines for Perinatal Care
Early State Regionalization

- Arizona
- Wisconsin
- Iowa
- Kansas
- North Carolina
Traditional Terminology

**Level I (TIOP I) – Basic (TIOP II)**

“Uncomplicated labor and delivery of normal term newborn...uncomplicated neonatal care of infants of appropriate gestational weight...term...do not require other than emergency resuscitation”

Consultation and transfer: < 35 weeks gestation; birthweight < 2000 gms
**Level II (TIOP I) – Specialty (TIOP II)**

“Full range of maternal and neonatal services for uncomplicated patients, for the majority of maternal complicated obstetrical problems and certain types of neonatal illnesses...resuscitation...short-term assisted ventilation with bag and mask...treating mildly ill infants...”

“referral of women in labor <34 weeks gestation...infants <34 weeks, < 2000 grams” (TIOP I) <32 weeks gestation, < 1500 grams” (TIOP II)
Traditional Terminology

**Level III (TIOP I) – Subspecialty (TIOP II)**

“Provide care for all types of maternal-fetal and neonatal illnesses and abnormalities” (TIOP I)

“Provide comprehensive perinatal care services for both admitted and transferred mothers and neonates of all risk categories”
State Definitions for Levels of Neonatal Services

States regulate health care services and facilities

- License hospitals
- Promulgate State Health Plans
  - Distribution of services
  - Allocation of resources
- Approve facility expansion and construction
- Implement Title V programs
  - Certification of specialty services
  - Reimbursement for specialty care
State Definitions for Levels of Neonatal Services

Sources for Definitions of Levels

- **Distribution**: 24 single; 9 two or more
- **Licensure**: 18; 2 additional refer to other state source
- **Certificate of Need/State Health Plan**: 13; 4 exclusively
- **State Health Department/affiliate**: 14; 9 exclusively
## State Definitions for Levels of Neonatal Services

<table>
<thead>
<tr>
<th>None</th>
<th>Named Beds/Units</th>
<th>Two Levels</th>
<th>Three Levels</th>
<th>Four Levels</th>
<th>Five or More Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arkansas&lt;br&gt;New Hampshire&lt;br&gt;South Dakota</td>
<td>Alaska&lt;br&gt;Connecticut&lt;br&gt;District of Columbia&lt;br&gt;Idaho&lt;br&gt;Michigan&lt;br&gt;Minnesota&lt;br&gt;Missouri&lt;br&gt;Montana&lt;br&gt;Nebraska&lt;br&gt;New Mexico&lt;br&gt;North Dakota&lt;br&gt;Oregon&lt;br&gt;Vermont&lt;br&gt;West Virginia&lt;br&gt;Wyoming</td>
<td>Oklahoma&lt;br&gt;Rhode Island&lt;br&gt;Wisconsin</td>
<td>California&lt;br&gt;Hawaii&lt;br&gt;Kansas</td>
<td>Alabama&lt;br&gt;Florida&lt;br&gt;Georgia</td>
<td>Arizona&lt;br&gt;Colorado&lt;br&gt;Delaware</td>
</tr>
<tr>
<td>Kentucky&lt;br&gt;Maine&lt;br&gt;Mississippi&lt;br&gt;Nevada&lt;br&gt;Ohio&lt;br&gt;Pennsylvania&lt;br&gt;Texas&lt;br&gt;Utah</td>
<td>Louisiana&lt;br&gt;Massachusetts&lt;br&gt;New Jersey&lt;br&gt;New York&lt;br&gt;North Carolina&lt;br&gt;Tennessee&lt;br&gt;Virginia</td>
<td></td>
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</tr>
</tbody>
</table>
State Definitions for Levels of Neonatal Services

Levels terminology: numeric, word, both

Range: 2 – 6 levels

Variation:
- Designate some Level III/Subspecialty as Regional Perinatal Centers
- Advanced level of care above base level for: Respiratory support, care of VLBW infants
- Subdivide one or more of traditional three levels
State Definitions for Levels of Neonatal Services

Functional Criteria

25 states use one or more to differentiate levels:

- Population characteristics
  - Birth Weight and/or Gestational Age

- Respiratory care
  - Supplemental O2 concentration or duration
  - Mode of ventilation or duration

- Neonatal surgery, cardiac surgery, ECMO

8 states use non-specific terms
- Mild, moderate, severe
State Definitions for Levels of Neonatal Services

Utilization Criteria

18 states have one or more requirements:

- **Capacity**: Minimum number of bed type per unit or per population base
- **Volume**: Deliveries or live births per year
- **Occupancy**: average daily census or percent capacity
- **Case Mix**: VLBW admissions, VLBW patient days, ventilator days, or neonatal surgeries per year
### State Definitions for Levels of Neonatal Services

<table>
<thead>
<tr>
<th>Compliance Measures</th>
<th>License Renewal</th>
<th>CON/SHP Approval</th>
<th>SHD/Affiliated Program Certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of States</td>
<td>18, 10†</td>
<td>13, 4†</td>
<td>14, 9†</td>
</tr>
<tr>
<td>Renewal</td>
<td>1-5 yrs</td>
<td>Application only</td>
<td>14</td>
</tr>
<tr>
<td>MF: annual</td>
<td></td>
<td></td>
<td>1-5 yrs</td>
</tr>
<tr>
<td>Mandated Reporting</td>
<td>11 states</td>
<td>7 states</td>
<td>2 regional centers only</td>
</tr>
<tr>
<td>On-site Inspections</td>
<td>11 states</td>
<td>2 states</td>
<td>7 states</td>
</tr>
<tr>
<td></td>
<td>4 initial</td>
<td></td>
<td>3, regional centers only</td>
</tr>
<tr>
<td></td>
<td>7 episodic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self Designation</td>
<td>1 state</td>
<td>1 state</td>
<td>4 states</td>
</tr>
</tbody>
</table>

† Single source  MF = Most Frequent
Arizona Perinatal Trust  http://azperinatal.org
private, non-profit organization – certifies perinatal care levels of hospitals

Arizona Perinatal Regional System, Inc.
“performing corporation of APT”; promulgates Recommendations and Guidelines for Perinatal Care Centers; evaluates regional perinatal system function; operates Voluntary Certification Program

Bureau of Women’s and Children’s Health
High Risk Perinatal/Newborn Intensive Care Program, contracts with certified hospitals and physicians for in-hospital care  www.azdhs.gov/owch/hiriskper.htm
Illinois

Regionalized Perinatal Health Care Code

*Implements Developmental Disability Prevention Act*

*Perinatal Advisory Committee to Department of Public Health*

*Standards for Perinatal Care applied in health facilities planning, licensure, hospital certification, funding for patient care*

Florida

Regional Perinatal Intensive Care Centers Program

comprehensive, statewide perinatal delivery system; Florida DOH CMS administers
focuses on perinatal care of high risk pregnancies and neonates
certifies both hospitals and physicians for reimbursement through Title 5 and Medicaid
11 RPICCs and 18 high risk obstetric clinics

www.doh.state.fl.us/cms/rpiccindex.html
www.doh.state.fl.us/cms/rpicc.handbook.pdf
State Definitions for Levels of Neonatal Services

Research Design - Systematic search of websites for all 50 states and DC

- Regulations for hospital licensure
- Regulations for Certificate of Need application
- State health facility planning documents
- State MCH funded patient services or programs
- Publications by affiliated non-governmental state perinatal health entities
State Definitions for Levels of Neonatal Services

Definition Criteria for Levels Designation

- Specific language to designate multiple patient care services (not physical facilities or units)
- Multiple care service levels described
- Description of graduated complexity of care capabilities or intensity of care requirements
# State Definitions for Levels of Neonatal Services

<table>
<thead>
<tr>
<th>Service Level</th>
<th>Functional Criteria: Birth Weight</th>
<th>Gestational Age</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low</strong> – I, Basic</td>
<td>Range: $&gt; 1.8 - &gt; 2.5$ kg</td>
<td></td>
</tr>
<tr>
<td>Advanced, IEQ</td>
<td>MF: $&gt; 2.5$ kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$&gt; 1.8$ kg</td>
<td></td>
</tr>
<tr>
<td><strong>Mid</strong> – II, IIa Specialty</td>
<td>Range: $&gt; 1.0$ kg - $&gt; 1.5$ kg</td>
<td></td>
</tr>
<tr>
<td>IIb</td>
<td>MF: $&gt; 1.5$ kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$&gt; 1.25$ kg</td>
<td></td>
</tr>
<tr>
<td><strong>High</strong> – IIIa</td>
<td>$&gt; 1.0$ kg</td>
<td></td>
</tr>
</tbody>
</table>

*MF = Most Frequent*
# State Definitions for Levels of Neonatal Services

<table>
<thead>
<tr>
<th>Functional Criteria:</th>
<th>Neonatal Surgery</th>
<th>Cardiac Surgery</th>
<th>ECMO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of States</td>
<td>N* – 20</td>
<td>N – 10</td>
<td>N – 3</td>
</tr>
<tr>
<td></td>
<td>S – 1</td>
<td>S – 5</td>
<td>S – 5</td>
</tr>
</tbody>
</table>

**Service Level**

**Mid**
- Advanced, II EC, II EQ
- IIb 2 states

**High**
- III 15 states
- IIIa Minor, 3 states
- IIIb 3 states
- IIIc, IIId 5 states
- IV 2 states
- RPC 11 states

*N* – Neonatal  
*S* – Separate
## State Definitions for Levels of Neonatal Services

<table>
<thead>
<tr>
<th>Functional Criteria:</th>
<th>Oxygen</th>
<th>Ventilatory Support</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Service Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Low</strong> – I, Basic</td>
<td>10</td>
<td>Stabilization only</td>
</tr>
<tr>
<td></td>
<td>Range: Limited, 40%</td>
<td>prior to transport</td>
</tr>
<tr>
<td></td>
<td>Hood, Nasal Cannula</td>
<td></td>
</tr>
<tr>
<td><strong>Mid</strong> – II, IIa Specialty</td>
<td></td>
<td>Limited, Emergent pending</td>
</tr>
<tr>
<td></td>
<td>Range: (&lt; 50% - &lt; 80% )</td>
<td>transport, With consult</td>
</tr>
<tr>
<td></td>
<td>Hood, NC</td>
<td>Short term</td>
</tr>
<tr>
<td></td>
<td>(&lt; 6 \text{ hr} - &lt; 4 \text{d} )</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NCPAP, CMV, CMV &lt; 24 \text{ hr}</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CMV with neonatologist</td>
</tr>
<tr>
<td><strong>High</strong> – IIIa</td>
<td></td>
<td>CMV only</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CMV, HFV, iNO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CMV, HFV, iNO</td>
</tr>
</tbody>
</table>
# State Definitions for Levels of Neonatal Services

<table>
<thead>
<tr>
<th>Utilization Criteria:</th>
<th>Capacity</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>beds/unit</td>
<td>deliveries/yr</td>
</tr>
<tr>
<td>Number of States</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Low</strong> – Advanced</td>
<td>10</td>
<td>6</td>
</tr>
</tbody>
</table>

- **Mid**
  - II, Intermediate: $\geq 4-10$  
    Range: $\geq 500$  
    Range: 1000
  - Specialty, IIa: intermediate
    Range: $-2000$  
    Range: $-2000$
  - CPC, Intermediate: 15 special care
  - Advanced, IIb: Range: 1000-$>1500$  
    1000

- **High**
  - Advanced, IIR, IIN: $\geq 10$
  - III, Subspecialty: 9 – 15  
    Range: 1500-2500  
    1500
  - RPC: 4/1000 LB  
    8/1000 LB  
    Range: 8000-10000
  
Green = region or district
### State Definitions for Levels of Neonatal Services

<table>
<thead>
<tr>
<th>Utilization Criteria:</th>
<th>Occupancy</th>
<th>Case Mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of States</td>
<td>ADC 3</td>
<td>% Capacity 5</td>
</tr>
<tr>
<td>Service Level Mid</td>
<td></td>
<td>High Risk Volume 5</td>
</tr>
<tr>
<td>II, Specialty, IIa</td>
<td>1-2 Level II</td>
<td>Range: 65-90%</td>
</tr>
<tr>
<td>CPC Intermediate</td>
<td>6 intermediate</td>
<td>&gt; 40 VLBW admits/yr</td>
</tr>
<tr>
<td>Advanced, IIb,</td>
<td>2-4 Level II</td>
<td>&gt; 1200 patient days/yr</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 125 VLBW ventilated or neonatal surgery/yr</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 72 ventilator days/yr</td>
</tr>
<tr>
<td></td>
<td></td>
<td>to ventilate &lt; 1 kg</td>
</tr>
</tbody>
</table>

**High**

- IIR, IIN, IIIa
- III, Subspecialty > 10 Level II & III

Range: 75-80%

> 2000 patient days/yr

> 4000 patient days/yr

> 250 VLBW ventilated or neonatal surgery/yr

Green = Both Facility and Regional