

# The Evidence from NRNJ database for VLBW Vol 2 (2021 revision)

(2003-2016)

## Definitions

Annual trend of ex-preterm/ gestation  
Limit of viability for extremely preterm infants  
Mortality for certain disorders; Overview  
Neuro-developmental disabilities (<28w, 3 years)

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Neonatal Research Network of Japan  
2020

# The Neonatal Research Network of Japan

## OBJECTIVES

The objectives of this study were to describe the characteristics and morbidity of very low birth weight infants, to identify the medical intervention for these infants, and to evaluate the factors affecting the outcome of these infants <sup>1, 2)</sup>.

## METHODS

A large multicenter neonatal research network that included level III NICUs from throughout Japan was established. The network included 202 centers and 60,632 infants weighing at or below 1,500 g, born or admitted to the centers in 2003-2016. Multivariate analyses using logistic regression for variables of VLBW were performed to calculate odds ratio of perinatal factors. All the factors included in the model are presented in the figure or table. Statistical analyses were performed using EZR.

The NRNJ was supported by the Research Grant of Ministry of Health, Labor and Welfare of Japan, 2003-2016.

1. Satoshi Kusuda, Masanori Fujimura, Izumi Sakuma, Hirofumi Aotani, Kazuhiko Kabe, Yasufumi Itani, Hiroyuki Ichiba, Katsura Matsunami, Hiroshi Nishida and for the Neonatal Research Network of Japan. Morbidity and Mortality of Infants With Very Low Birth Weight in Japan: Center Variation. *Pediatrics* 2006;118:e1130-e1138; originally published online Sep 1, 2006
2. Kono Y, Yonemoto N, Nakanishi H, et al. Changes in survival and neurodevelopmental outcomes of infants born at <25 weeks' gestation: a retrospective observational study in tertiary centres in Japan. *BMJ Paediatrics Open* 2018;2:e000211. doi:10.1136/bmjpo-2017-000211

## Definitions

We compiled a network **database operation manual** to define the patient characteristics. In the manual, the day of birth was defined as day 0. **Neonatal mortality** was defined as death within 28 days of birth and mortality before discharge as death occurring before discharge from a participating NICU. **Gestational age** (GA) was determined in the following order: obstetric examination with ultrasonography, obstetric history based on last menstrual period, and then postnatal physical examinations of neonates. Infants weighing 10th percentile of the normal **birth weight** curve at each GA were defined as light for GA.2 Maternal diabetes mellitus (DM) or gestational DM (GDM) and maternal hypertension were determined according to the diagnostic criteria. **Premature rupture of membranes** (PROM) was defined as rupture of membranes before an onset of labor. **Clinical chorioamnionitis** was diagnosed based on the clinical findings, such as maternal fever, leukocytosis, and local pain. Histologic chorioamnionitis was defined according to the criteria reported by Blanc. **Antenatal steroid** (ANS) usage was defined as the administration of any corticosteroids to accelerate fetal lung maturity. **Surfactant** therapy meant pulmonary surfactant (Surfacten) given during the acute phase of respiratory problems. **Respiratory distress syndrome** was diagnosed based on the clinical and radiographic findings. **Chronic lung disease** (CLD) was defined when an infant received supplemental oxygen on the 28th day after birth (Page 70 for definition), and 36-week CLD was defined when an infant received supplemental oxygen at the 36th week postmenstrual age. **Postnatal steroid** (PNS) usage meant any steroids given during the hospital stay for the prevention or treatment of CLD. **Symptomatic patent ductus arteriosus** (PDA) was diagnosed based on both the echocardiographic findings and clinical evidence of a volume overload because of a left-to-right shunt. **Persistent pulmonary hypertension** of the newborn (PPHN) was defined as right-to-left shunt at the foramen ovale and/or ductus arteriosus without any anatomic malformations as detected by cardiac echocardiography. **Intraventricular hemorrhage** (IVH) was reported according to the classification of Papile et al. **Necrotizing enterocolitis** (NEC) was defined according to the classification of Bell et al: stage II or greater. Gastrointestinal perforation was diagnosed if free air was detected in the abdominal cavity by radiograph examination regardless of cause. **Sepsis** meant culture-proven septicemia or bacteremia at any time during the stay in the NICU. A **cystic periventricular leukomalacia** (PVL) diagnosis was made by using either head ultrasound or cranial MRI scans, performed either at 2 weeks of age or later. **Intrauterine infection** was diagnosed if any inflammatory response was detected in the infants at birth. **Retinopathy of prematurity** (ROP) was diagnosed if the infants were treated with laser coagulation, cryocoagulation therapy, or both. Patients were classified into **adrenal insufficiency of prematurity** (AOP) when any steroids were administered during the hospital stay for the treatment of a late-onset circulatory collapse of premature infants because of an impaired adrenal function. Major **congenital anomalies** did not include external malformation.

- Morbidity and Mortality of Infants With Very Low Birth Weight in Japan: Center Variation  
Satoshi Kusuda,MDa, Masanori Fujimura,MDb, Izumi Sakuma,MDa, Hirofumi Aotani,MDc, Kazuhiko Kabe,MDd, Yasufumi Itani,MDe, Hiroyuki Ichiba,MDf, Katsura Matsunami,MDb, Hiroshi Nishida,MDa, for the Neonatal Research Network, Japan. PEDIATRICS Volume 118, Number 4, October 2006

# The Evidence from NRNJ database for VLBW (2003-2016)

-Vol 2-

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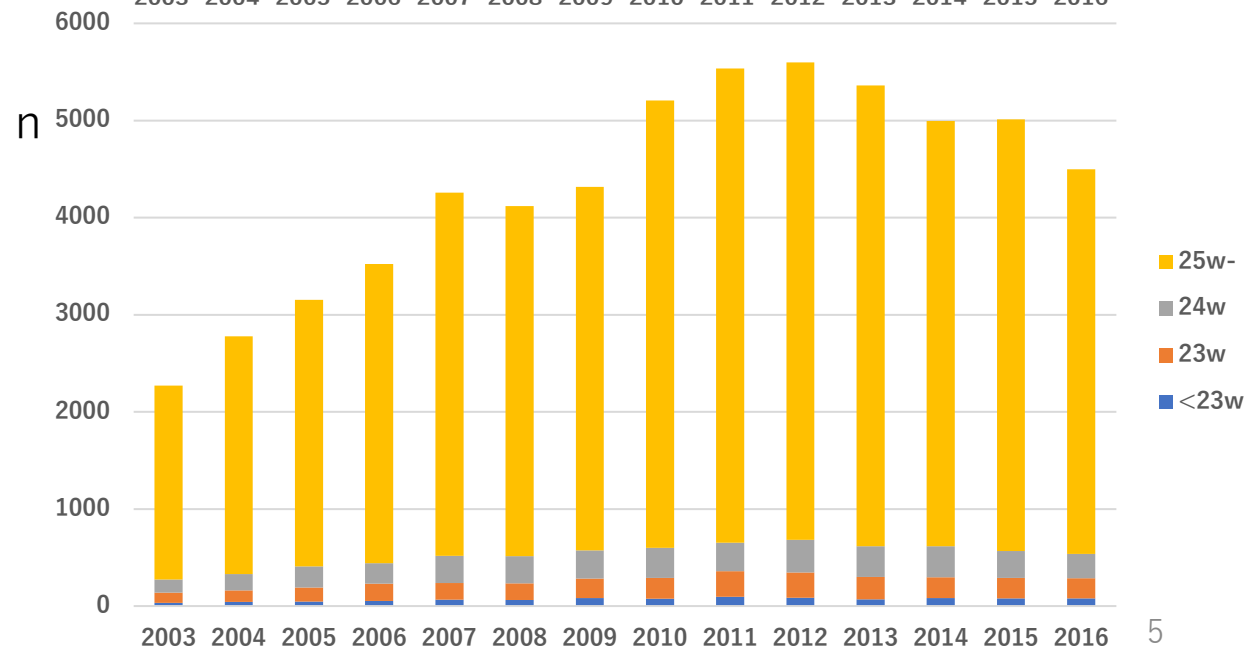
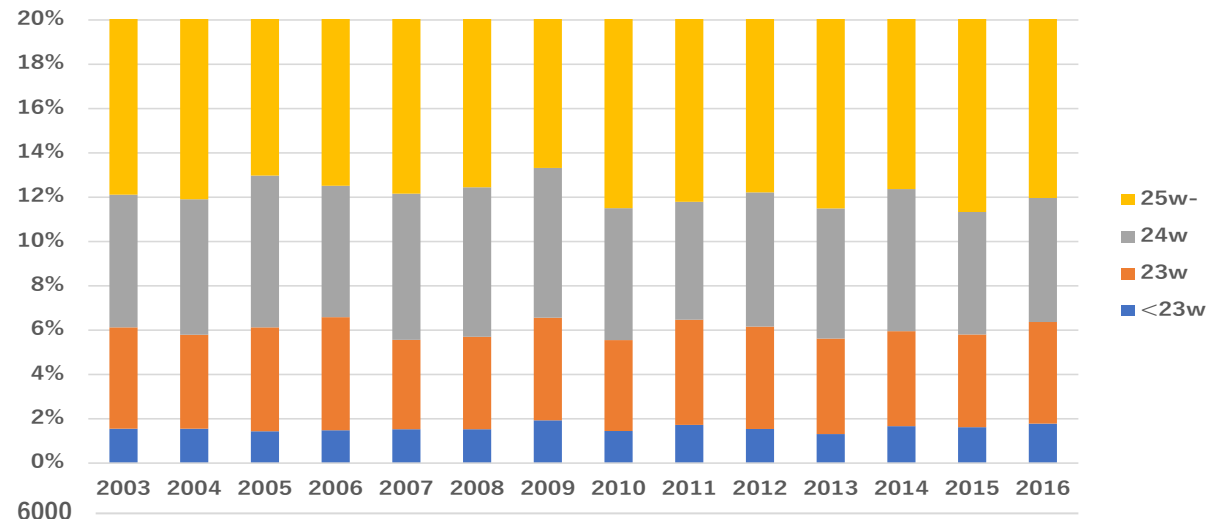
60,632 infants  $\leq 1,500$  g

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22-30	Neuro-developmental disabilities (<28w, 3 years) 2003-2016

# NRNJ Database 2003-2016

## Annual trend of ex-preterm/ gestation

NRNJ0522	<23w	23w	24w	25w-	Total
2003	35	104	136	1,995	2,270
2004	43	118	170	2,449	2,780
2005	45	148	216	2,744	3,153
2006	52	180	209	3,082	3,523
2007	65	172	281	3,741	4,259
2008	63	172	278	3,608	4,121
2009	83	200	292	3,741	4,316
2010	75	214	310	4,607	5,206
2011	95	263	295	4,885	5,538
2012	86	259	339	4,915	5,599
2013	70	231	315	4,745	5,361
2014	83	214	321	4,378	4,996
2015	81	210	277	4,444	5,012
2016	80	206	252	3,960	4,498
<b>Total</b>	<b>956</b>	<b>2,691</b>	<b>3,691</b>	<b>53,294</b>	<b>60,632</b>



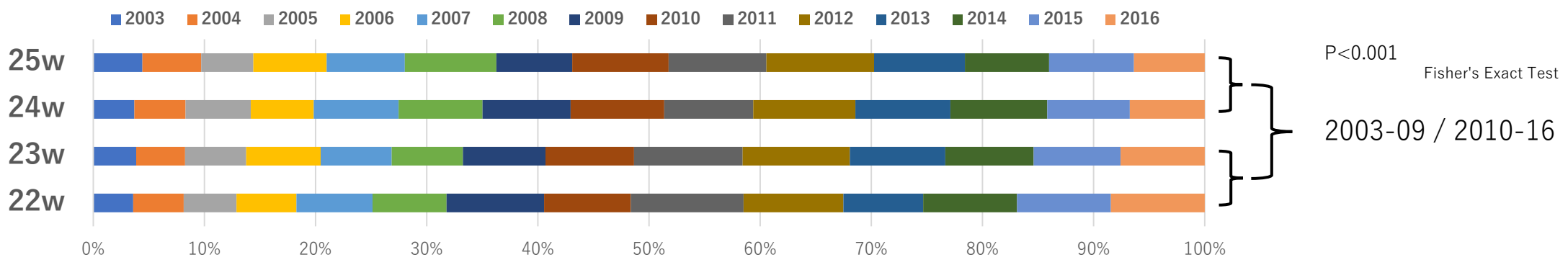
# Vital statistics of Japan vs NRNJ data-base

◆ NRNJ data-base comprises approximately 65% of very low birthweight infants of Japanese census born in 2015/2016.

Year	Birth weight	Vital statistics of Japan	NRNJ	NRNJ/Japan
2015	-999g	3,084	2,083	0.675
	1000-1499g	4,426	2,927	0.661
2016	-999g	2,891	1,830	0.633
	1000-1499g	4,124	2,614	0.634

◆ A significant increase of smaller gestations(22, 23w) comparing those of (24, 25w) between 2003-09 with 2010-16.

## Annual trend of gestational ratio



# Limit of viability for extremely preterm infants

# Limit of viability for extremely preterm infants \*

1. Take an example gestation (for example 24 weeks at birth), and analyze annual trend of:

①Survival rate ②Major disability rate (for example 3 years)

2. How is the expected result of following questions ?

Q ①: What is the survival rate ?

**Type 1**                      **Decreasing survival**                      ⇒ **Inappropriate to care for this gestation.**

**Type 2**                      **No change in survival**                      ⇒ **Need to re-examine the care for this gestation.**

Type 3    Improving the survival                      ⇒ Go to ②

Q ②: What is the major disability rate among the survivors ?

**Type A**                      **Increasing**                      ⇒ **Inappropriate to care for this gestation.**

Type B    No change                      ⇒ Near to the limit for this gestation, but acceptable.

Type C    Decreasing                      ⇒ The limit of viability may still be lower gestation.

**Definition of viability**

**Type 3 B or C NICU is entitled for care of extremely preterm infants”**

**Let's apply this proposal to extremely preterm infants cared for in NRNJ 2003-2016.**

\* (Masanori Fujimura, Care for extremely preterm infants in view of their outcomes –The evidence-. J Japan Society of Premature and Newborn Medicine 2003;15(1), 1-14)

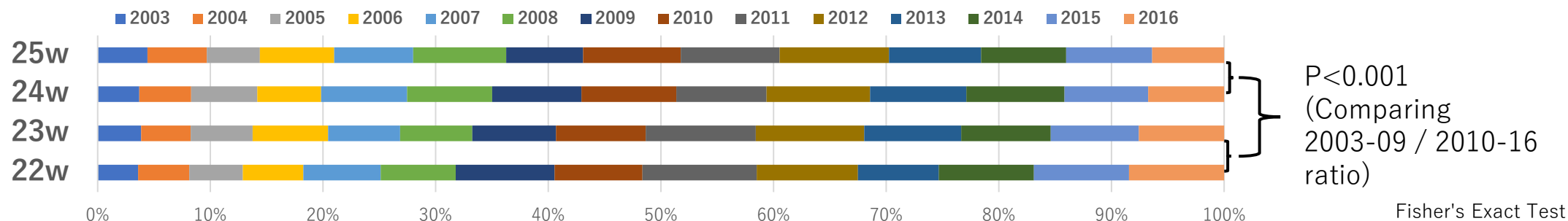


# Annual trend of admissions (2003-2016)

## 22w, 23w, 24w & 25w

Database20200122  
NRNJ0522

◆ The ratio of smaller gestation is increasing.



	Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
N	20w	1							1			1	1	1		5
	21w				1						1	1	3			6
	22w	34	43	45	51	65	63	83	74	96	85	68	80	80	80	947
	23w	104	118	148	180	172	172	200	214	263	259	231	214	210	204	2,689
	24w	136	170	216	209	281	278	292	310	295	339	315	321	273	249	3,684
	25w	188	225	200	281	299	351	291	369	374	413	348	322	325	272	4,258
	Total	463	556	609	722	817	864	866	968	1,028	1,097	964	941	889	805	11,589

	Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Ratio (%)	20w	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%
	21w	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.3%	0.0%	0.0%	0.1%
	22w	7.3%	7.7%	7.4%	7.1%	8.0%	7.3%	9.6%	7.6%	9.3%	7.7%	7.1%	8.5%	9.0%	9.9%	8.2%
	23w	22.5%	21.2%	24.3%	24.9%	21.1%	19.9%	23.1%	22.1%	25.6%	23.6%	24.0%	22.7%	23.6%	25.3%	23.2%
	24w	29.4%	30.6%	35.5%	28.9%	34.4%	32.2%	33.7%	32.0%	28.7%	30.9%	32.7%	34.1%	30.7%	30.9%	31.8%
	25w	40.6%	40.5%	32.8%	38.9%	36.6%	40.6%	33.6%	38.1%	36.4%	37.6%	36.1%	34.2%	36.6%	33.8%	36.7%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%



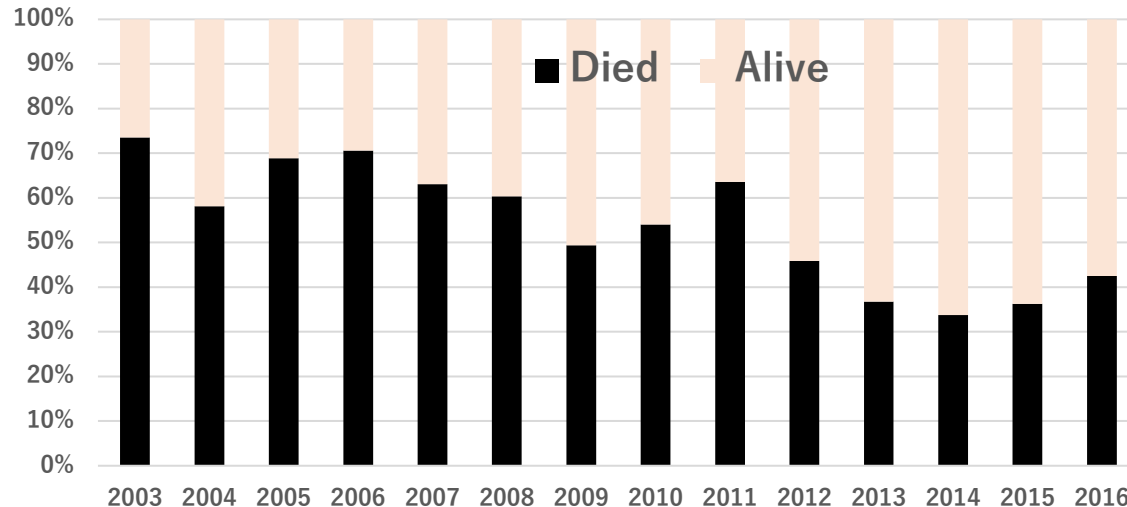
# Annual trend of mortality for 20w, 21w, 22w (2003-2016)

◆ There were 2/3 infants of 20w died/alive, 2/4 infants of 21w died/alive, and 947 infants of 22w. (The Cinderella effect)

	20w					21w					22w											22w Total			
	2003	2010	2013	2014	2015	2006	2012	2013	2014	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		
Died	1	1							2	25	25	31	36	41	38	41	40	61	39	25	27	29	34	492	
Aive			1	1	1	1	1	1	1	9	18	14	15	24	25	42	34	35	46	43	53	51	46	455	
Total	1	1	1	1	1	1	1	1	3	34	43	45	51	65	63	83	74	96	85	68	80	80	80	947	
Mortality(%)											74%	58%	69%	71%	63%	60%	49%	54%	64%	46%	37%	34%	36%	43%	52.0%

◆ Between 2003 to 2016 the mortality for 22w has significantly decreased 2% every year.

22w

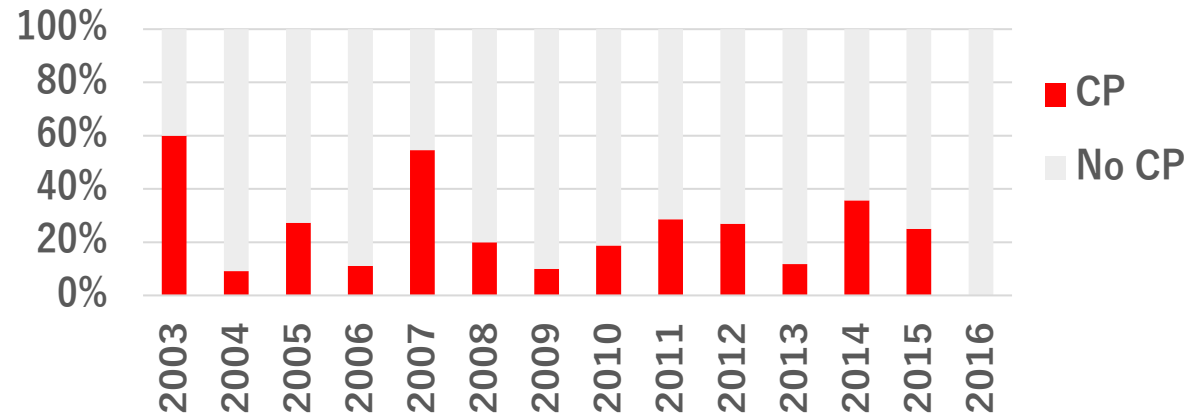


Dependent variable			
	odds ratio	95%CI	P
Died			
22w	0.89	0.86-0.92	<0.001

Logistic regression adjusted for gestation

# Annual trend of Cerebral Palsy (22w)

◆ In 14 years 2003-2016, no significant change of CP rate for 22w.



Dependent variable	22w	odds ratio	95%CI	P
CP	Year	0.97	0.88 1.07	0.51

Logistic regression adjusted for gestation

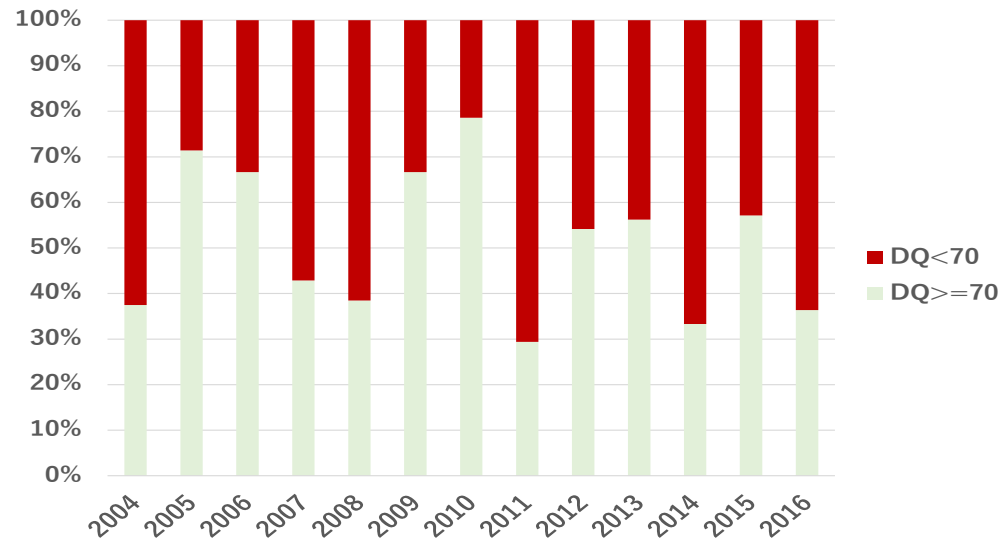
GA=22w

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
CP	3	1	3	1	6	3	2	3	6	7	2	5	4	0	46
No CP	2	10	8	8	5	12	18	13	15	19	15	9	12	7	153
Total	5	11	11	9	11	15	20	16	21	26	17	14	16	7	199
%CP	60%	9%	27%	11%	55%	20%	10%	19%	29%	27%	12%	36%	25%	0%	23%

# Annual trend of DQ<70 (22w)

◆ In 14 years 2003-2016, no significant change of DQ<70 rate for 22w.

GA=22w



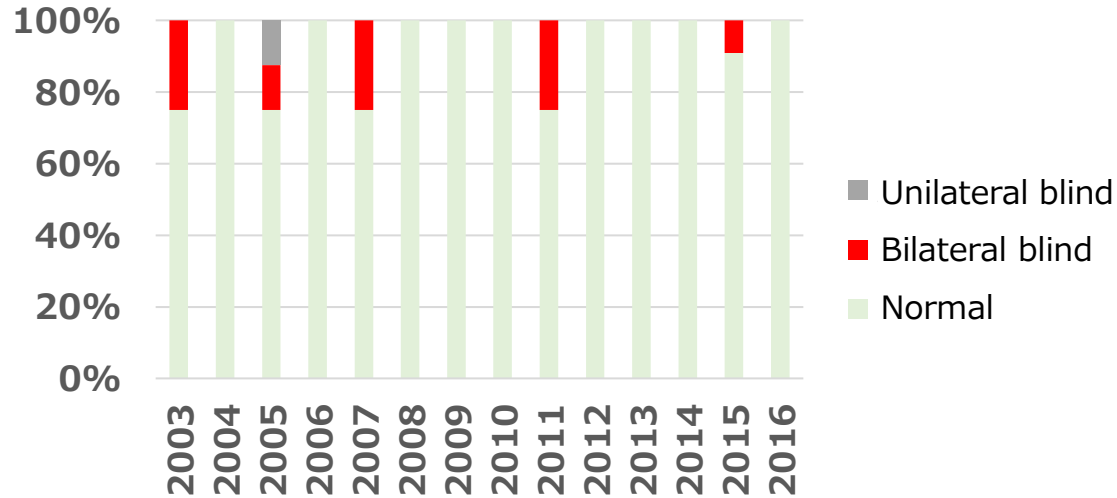
Dependent variable		22w		
DQ<70	odds	95%CI	P	
Year	1.04	0.94	1.14	0.45

Logistic regression adjusted for gestation

22w	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
DQ>=70	3	5	4	3	5	12	11	5	13	9	4	8	4	86
DQ<70	5	2	2	4	8	6	3	12	11	7	8	6	7	81
Total	8	7	6	7	13	18	14	17	24	16	12	14	11	167
%DQ<70	63%	29%	33%	57%	62%	33%	21%	71%	46%	44%	67%	43%	64%	49%

# Annual trend of Visual Impairment ( 3 yrs)

◆ For children of 22w, visual impairment ( 3 yrs) decreased 2008 – 2016



22w Blind	Odds ratio	95% CI	P
Year	0.723	0.523–1.000	<0.05

Logistic regression

22w

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Normal	3	8	6	5	3	4	6	5	3	5	7	3	10	3
Bilateral blind	1		1		1				1				1	
Unilateral blind			1											
Total	4	8	8	5	4	4	6	5	4	5	7	3	11	3

# Limit of viability for extremely preterm infants Summary of annual trend

Taking 22 week of NRNJ data as an example,

×; No,    ○; Yes

Q ①: What is the survival rate?

- × Type 1      ~~Decreasing survival~~ ⇒ ~~Inappropriate to care for this gestation.~~
- × Type 2      ~~No change in survival~~ ⇒ ~~Need to re-examine the care for this gestation.~~
- Type 3      Improving the **survival**

Go to ②

Q ②: What is the major disability rate among the survivors ?

- × Type A      Increasing ⇒ ~~Inappropriate to care for this gestation.~~
- |        |            | CP | DQ<70 | VI |   |
|--------|------------|----|-------|----|---|
| Type B | No change  | ○  | ○     |    | ⇒ Near to the limit for this gestation, but acceptable .  |
| Type C | Decreasing |    |       | ○  | ⇒ The limit of viability may still be at lower gestation. |

## Conclusions:

- 22 week meets the criteria of Type 3- B or C.
- 22 week is near to the limit of viability but acceptable for active intervention

## Mortality of extremely preterm infants for certain disorders

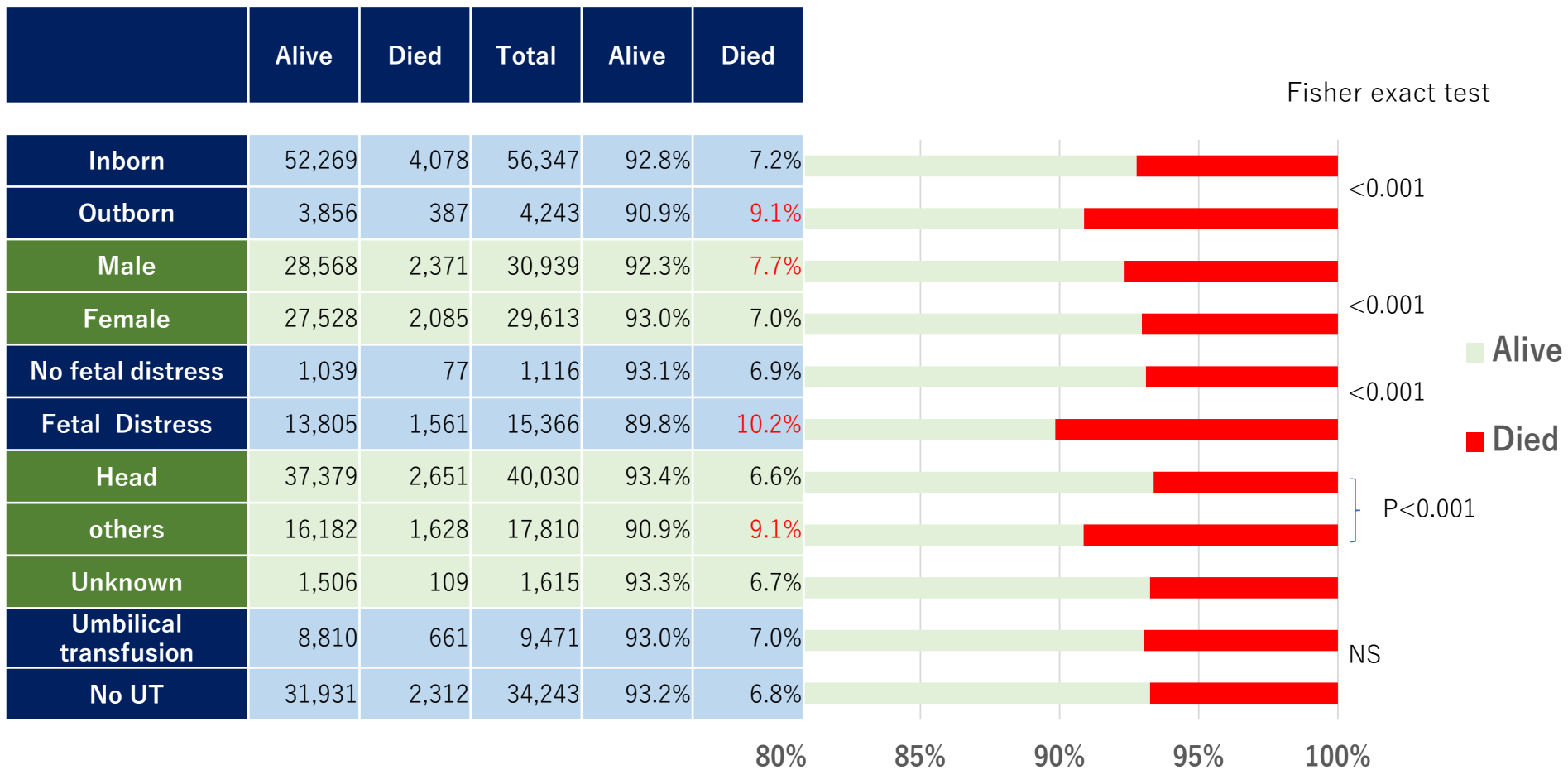
The results of NRNJ database  
2003-2016

Simple correlation in mortality with and without morbidity.

1. Place of birth, Gender, Fetal monitoring, Presentation, Umbilical transfusion
2. SFD, Mode of delivery, Zygosity, DM, PIH, CAM, PROM, Antenatal steroid
3. Seizure, IVH, PVL, HIE
4. CLD, PDA, Adrenal insufficiency Sepsis
5. NEC, TPN, Intestinal perforation, Surgical operation, Blood transfusion, ROP treatment, Congenital malformation
6. Oxygen therapy, CPAP, IPPV

# Mortality for certain disorders

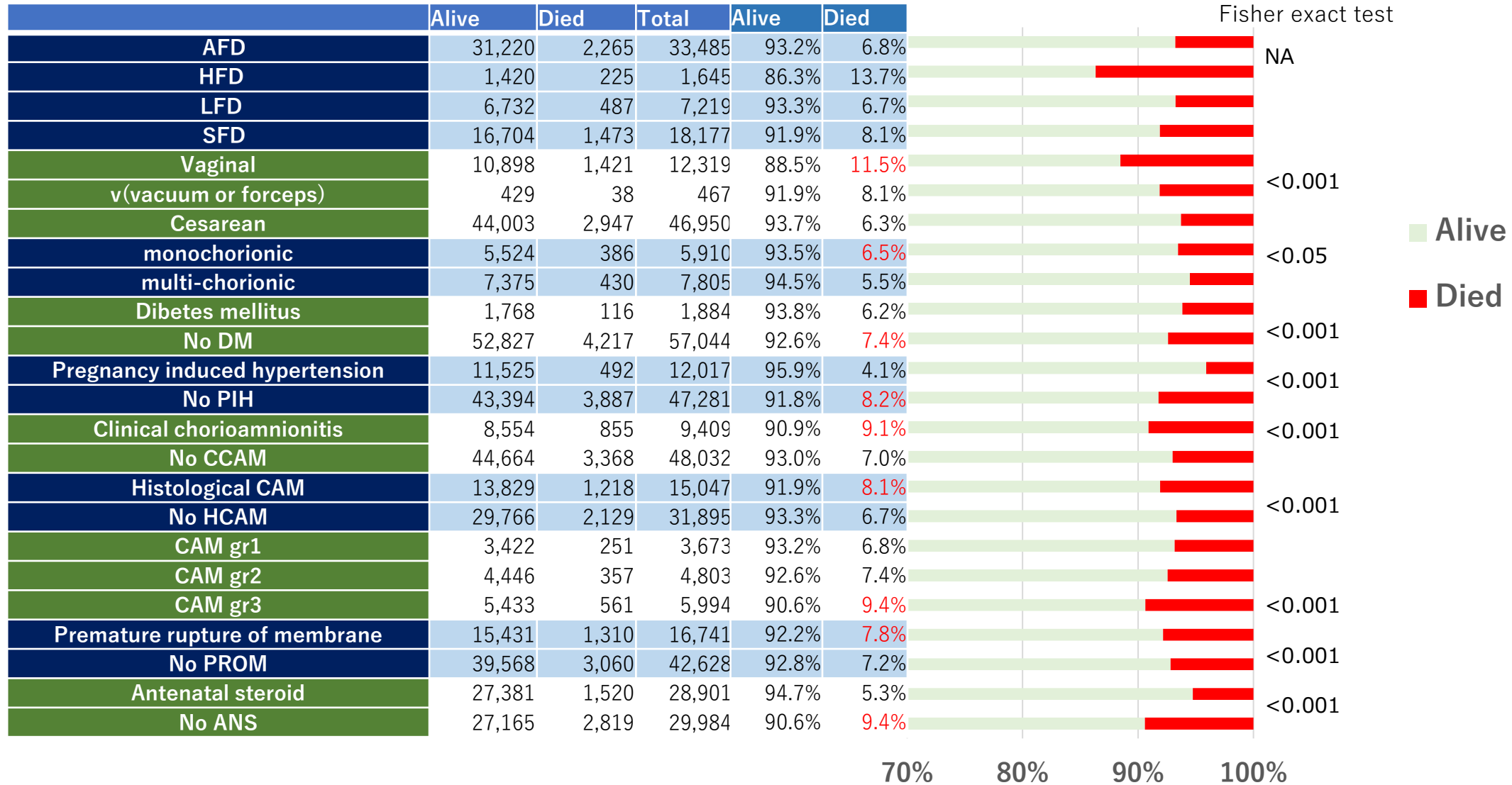
## 1. Place of birth, Gender, Fetal monitoring, Presentation, Umbilical transfusion





# Mortality for certain disorders

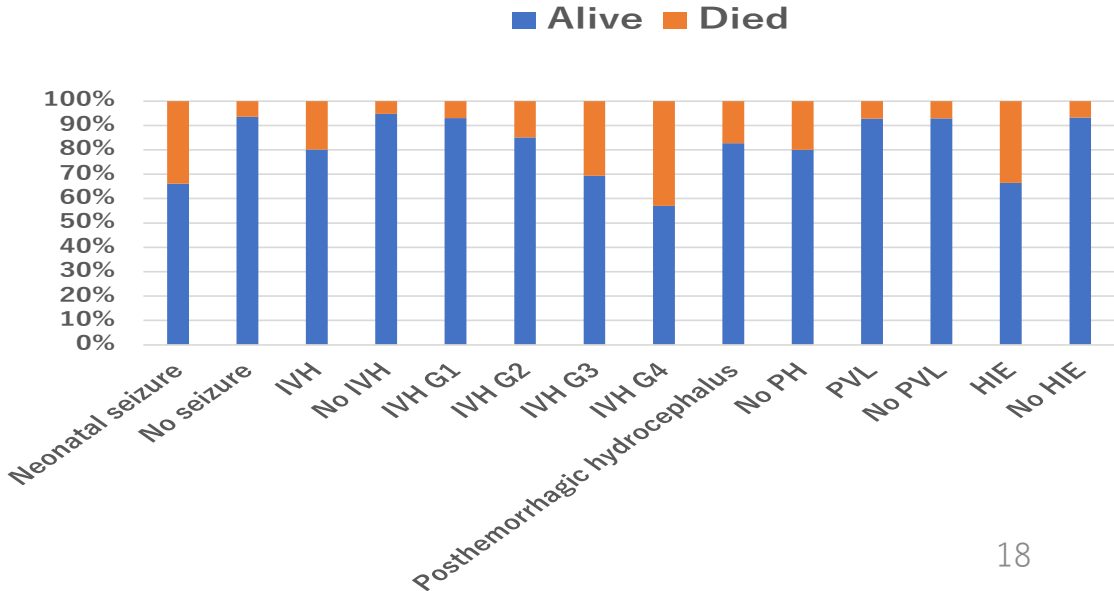
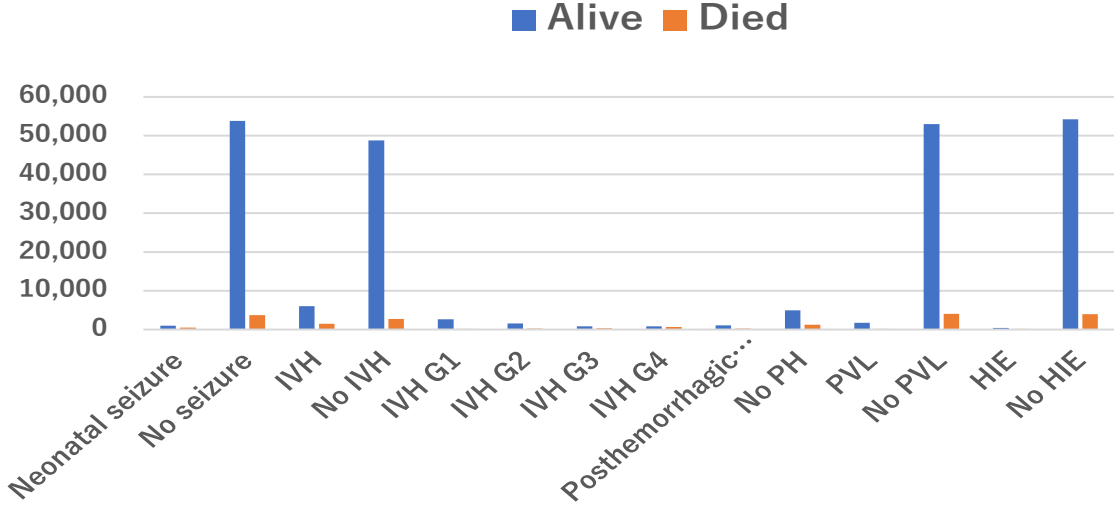
## 2. SFD, Mode of delivery, Zygosity, DM, PIH, CAM, PROM, Antenatal steroid



### 3. Seizure, IVH, PVL, HIE

	Alive	Died	Total	P
<b>Total</b>	<b>56125</b>	<b>4465</b>	<b>60590</b>	<b>P</b>
<b>Neonatal seizure</b>	1,015	519	1,534	<0.001
<b>No seizure</b>	53,814	3,714	57,528	
<b>IVH</b>	6,050	1,503	7,553	<0.001
<b>No IVH</b>	48,778	2,720	51,498	
<b>IVH G1</b>	2,634	198	2,832	<0.001
<b>IVH G2</b>	1,560	273	1,833	
<b>IVH G3</b>	824	364	1,188	
<b>IVH G4</b>	828	623	1,451	
<b>Posthemorrhagic hydrocephalus</b>	1,063	222	1,285	0.025
<b>No PH</b>	4,912	1,230	6,142	
<b>PVL</b>	1,716	134	1,850	NS
<b>No PVL</b>	52,946	4,016	56,962	
<b>HIE</b>	369	186	555	<0.001
<b>No HIE</b>	54,167	3,940	58,107	

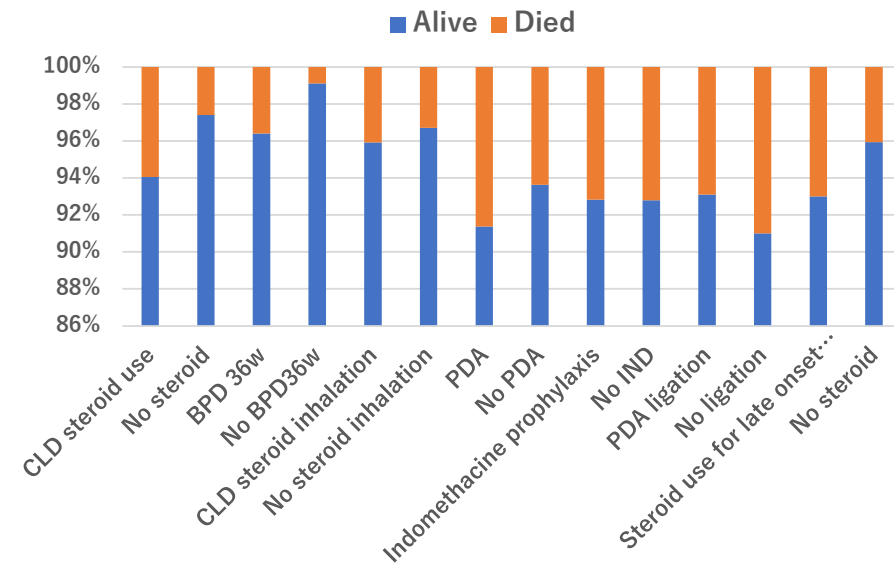
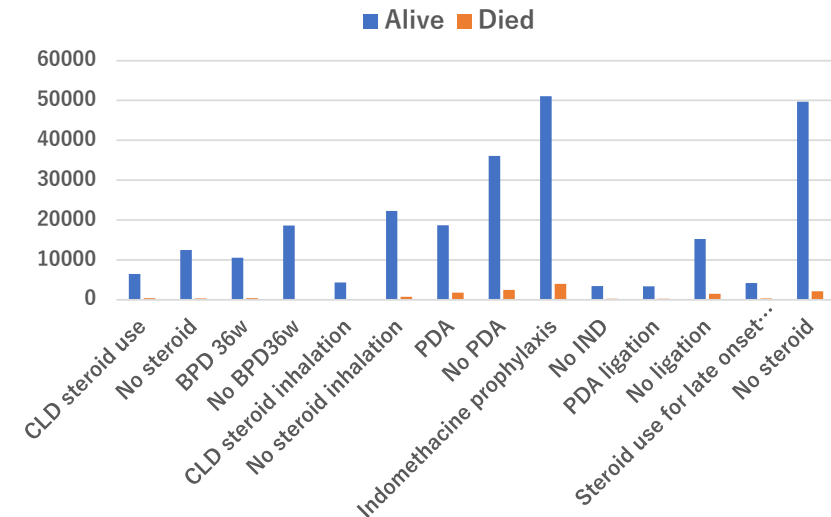
Fisher exact test



## 4. CLD, PDA, Adrenal insufficiency

	Alive	Died	Total	P
<b>Total</b>	<b>56,125</b>	<b>4,465</b>	<b>60,590</b>	
<b>CLD steroid use</b>	6,495	411		<0.001
<b>No steroid</b>	12,459	332	12,791	
<b>BPD 36w</b>	10,563	395	10,958	
<b>No BPD36w</b>	18,607	167	18,774	<0.001
<b>CLD steroid inhalation</b>	4,348	185	4,533	0.008
<b>No steroid inhalation</b>	22,253	757	23,010	
<b>PDA</b>	18,706	1,767	20,473	<0.001
<b>No PDA</b>	36,090	2,452	38,542	
<b>Indomethacine prophylaxis</b>	51,075	3,947	55,022	NS
<b>No IND</b>	3,453	268	3,721	
<b>PDA ligation</b>	3,335	247	3,582	<0.001
<b>No ligation</b>	15,233	1,506	16,739	
<b>Steroid use for late onset adrenal insuff</b>	4,215	317	4,532	
<b>No steroid</b>	49,676	2,106	51,782	<0.001

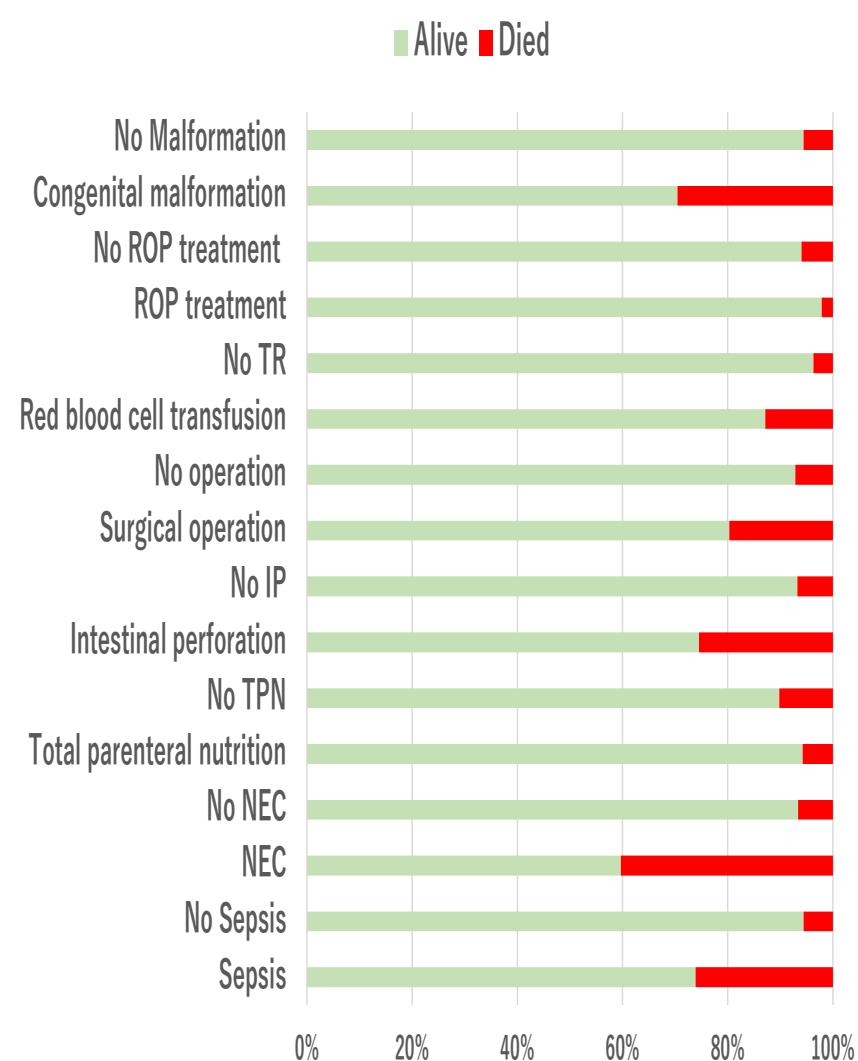
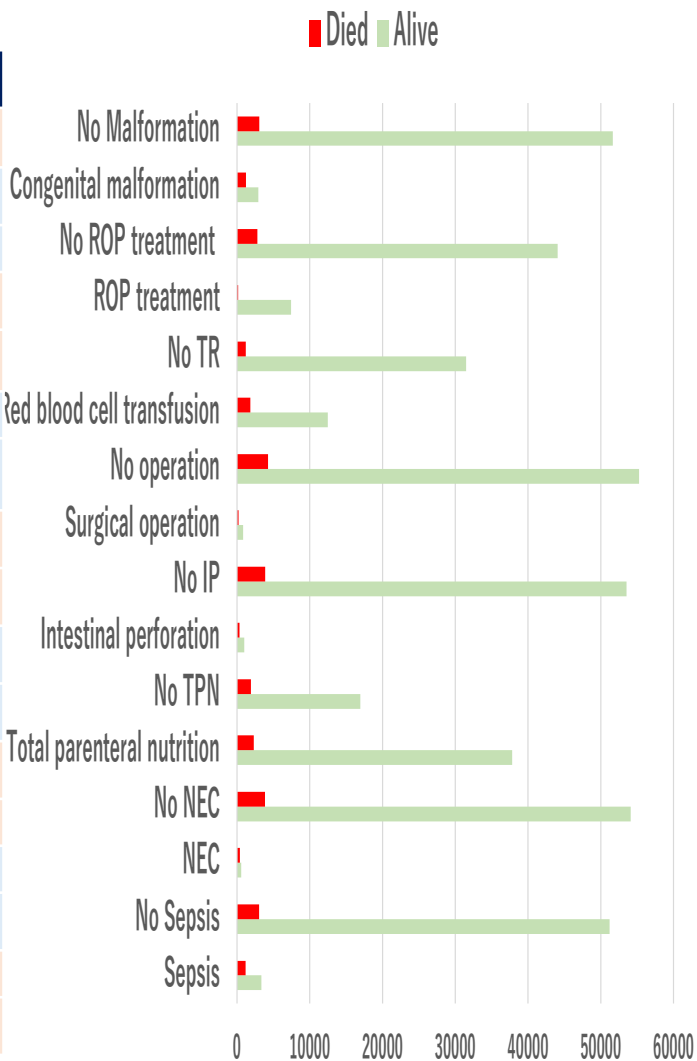
Fisher exact test



5. Sepsis, NEC, TPN, Intestinal perforation, Surgical operation, Blood transfusion, ROP treatment, Congenital malformation

	Alive	Died	Total	P
<b>Total</b>	56,125	4,465	60,590	
<b>No Malformation</b>	51,665	3,063	54,728	
<b>Congenital malformation</b>	2,925	1,227	4,152	<0.001
<b>No ROP treatment</b>	44,074	2,807	46,881	
<b>ROP treatment</b>	7,422	161	7,583	<0.001
<b>No TR</b>	31,501	1,216	32,717	<0.001
<b>Red blood cell transfusion</b>	12,465	1,842	14,307	
<b>No operation</b>	55,276	4,257	59,533	
<b>Surgical operation</b>	849	208	1,057	<0.001
<b>No IP</b>	53,547	3,883	57,430	
<b>Intestinal perforation</b>	984	336	1,320	<0.001
<b>No TPN</b>	16,947	1,923	18,870	
<b>Total parenteral nutrition</b>	37,812	2,313	40,125	<0.001
<b>No NEC</b>	54,116	3,836	57,952	<0.001
<b>NEC</b>	576	389	965	
<b>No Sepsis</b>	51,226	3,033	54,259	<0.001
<b>Sepsis</b>	3,353	1,184	4,537	

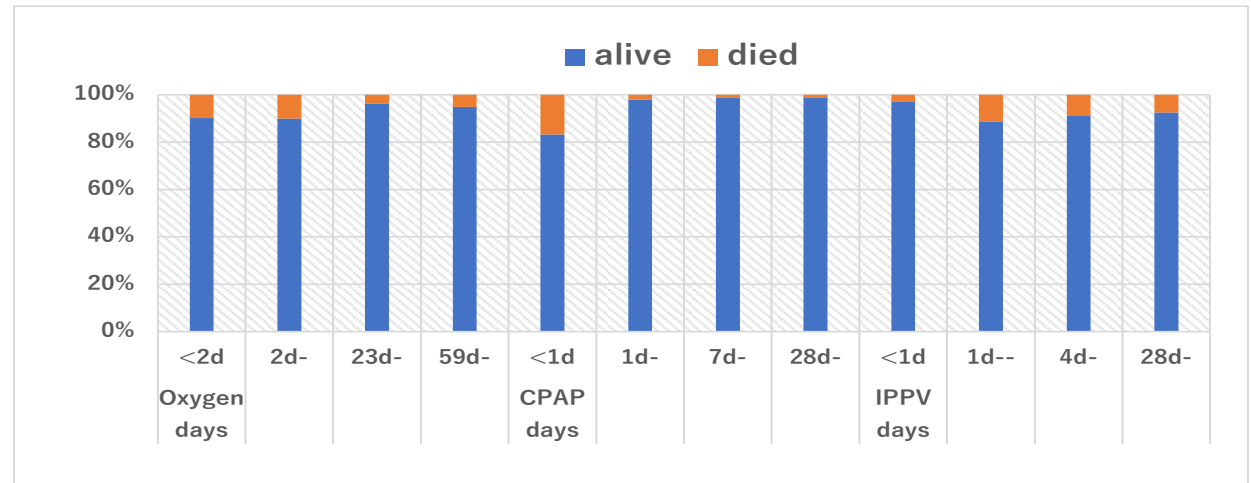
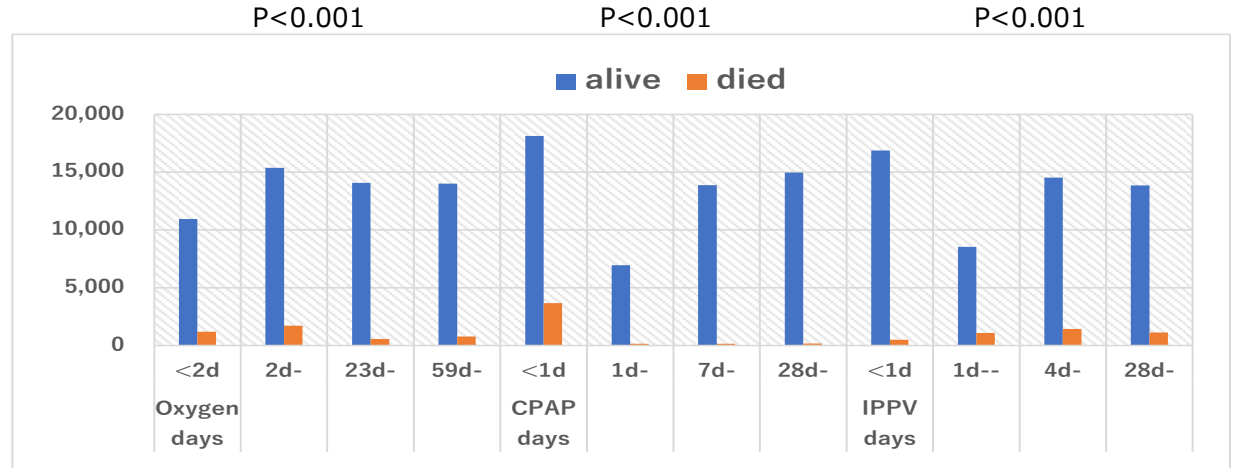
Fisher exact test



## 6. Oxygen therapy, CPAP, IPPV

		alive	died
<b>Total</b>		<b>56,125</b>	<b>4,465</b>
<b>Oxygen days</b>	<2d	10,948	1,190
	2d-	15,377	1,719
	23d-	14,079	547
	59d-	14,017	768
<b>CPAP days</b>	<1d	18,133	3,654
	1d-	6,952	151
	7d-	13,882	151
	28d-	14,957	176
<b>IPPV days</b>	<1d	16,874	494
	1d--	8,525	1,085
	4d-	14,519	1,426
	28d-	13,856	1,126

	alive	died
<2d	90.2%	9.8%
2d-	89.9%	10.1%
23d-	96.3%	3.7%
59d-	94.8%	5.2%
<1d	83.2%	16.8%
1d-	97.9%	2.1%
7d-	98.9%	1.1%
28d-	98.8%	1.2%
<1d	97.2%	2.8%
1d--	88.7%	11.3%
4d-	91.1%	8.9%
28d-	92.5%	7.5%



# Neuro-developmental disabilities (<28w, 3 years)

NRNJ database  
2003-2016

# Disability of extremely preterm infants (<28w, 3 years)

◆ Children of ex-preterm infants (<28w) at 3 years are shown with and without major disabilities.

(N)

Cerebral palsy	No CP	CP	Total
22w	57	6	63
23w	319	53	372
24w	545	73	618
25-27w	3543	323	3866
Total	4464	455	4919

DQ<70	No DQ<70	DO<70	Total
22w	36	27	63
23w	222	150	372
24w	415	203	618
25-27w	3209	657	3866
Total	3882	1037	4919

Visual impairment	No VI	VI	Total
22w	46	17	63
23w	298	74	372
24w	525	93	618
25-27w	3612	254	3866
Total	4481	438	4919

Hearing aid	No HA	HA	Total
22w	63		63
23w	369	3	372
24w	610	8	618
25-27w	3830	36	3866
Total	4872	47	4919

(%)

CP	No CP	CP	Total
22w	90.5%	9.5%	100%
23w	85.8%	14.2%	100%
24w	88.2%	11.8%	100%
25w-	91.6%	8.4%	100%
Total	90.8%	9.2%	100%

DQ<70	No DQ<70	DO<70	Total
22w	57.1%	42.9%	100%
23w	59.7%	40.3%	100%
24w	67.2%	32.8%	100%
25-27w	83.0%	17.0%	100%
Total	78.9%	21.1%	100%

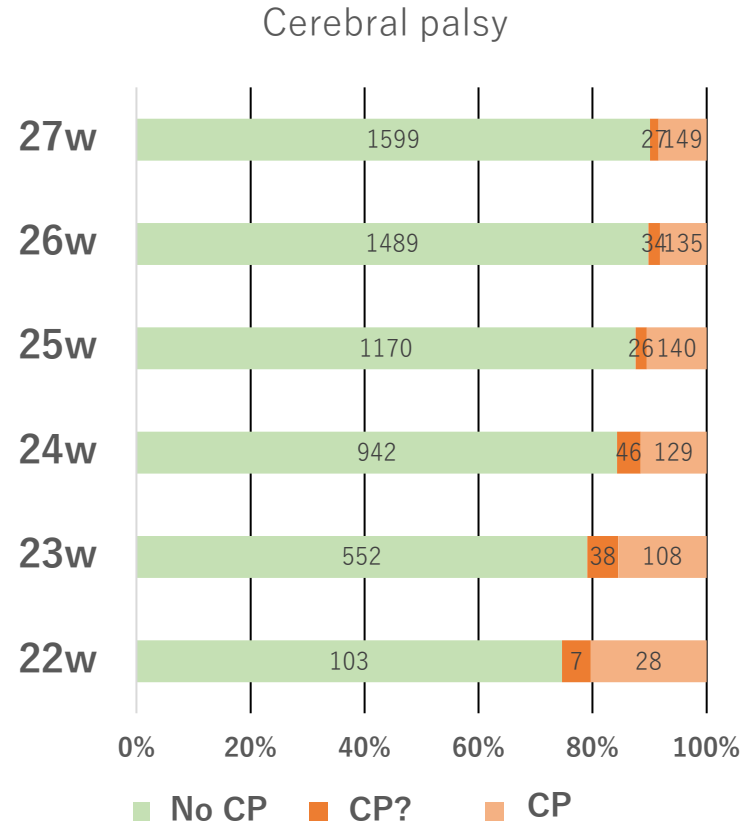
VI	No VI	VI	Total
22w	73.0%	27.0%	100%
23w	80.1%	19.9%	100%
24w	85.0%	15.0%	100%
25w-	93.4%	6.6%	100%
Total	91.1%	8.9%	100%

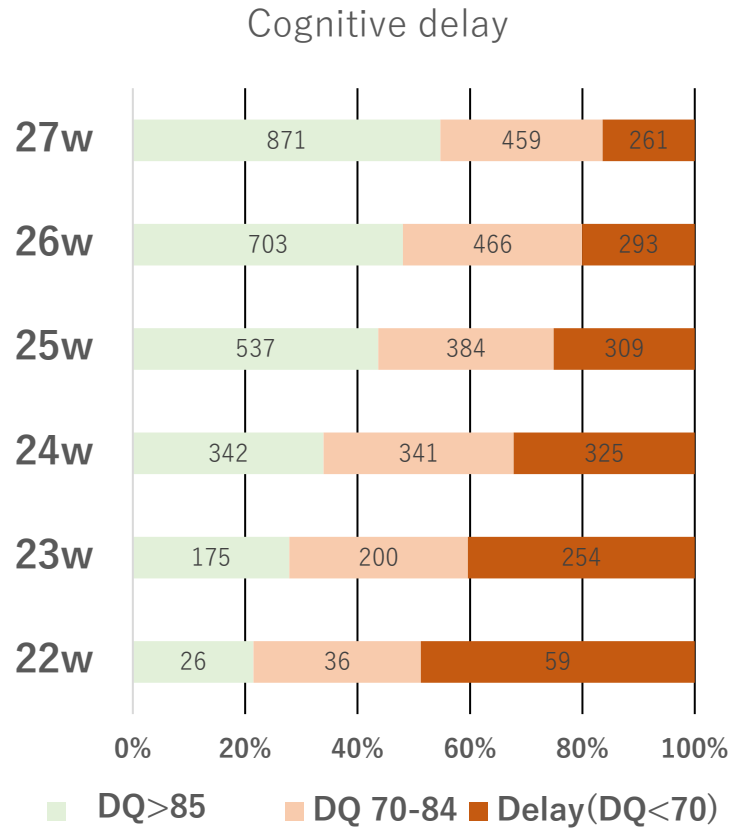
HA	No HA	HA	Total
22w	100.0%	0.0%	100%
23w	99.2%	0.8%	100%
24w	98.7%	1.3%	100%
25-27w	99.1%	0.9%	100%
Total	99.0%	1.0%	100%

# Cerebral palsy, Cognitive delay, Hearing aids and Gestational age

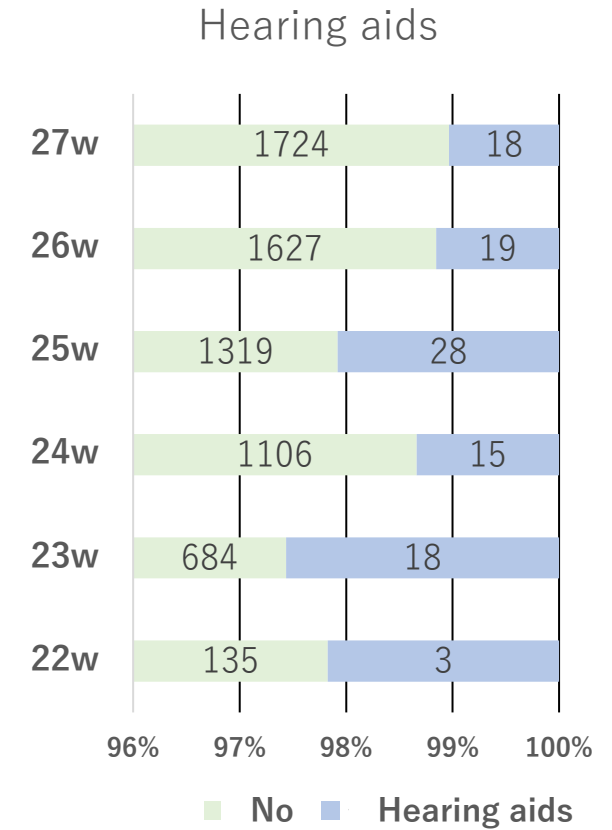
- ◆ The proportion of disabilities according to gestational weeks of birth are shown.
- ◆ Large proportion of cognitive delay is the characteristic disability in extreme preterm births.



N= 6,723



6,041



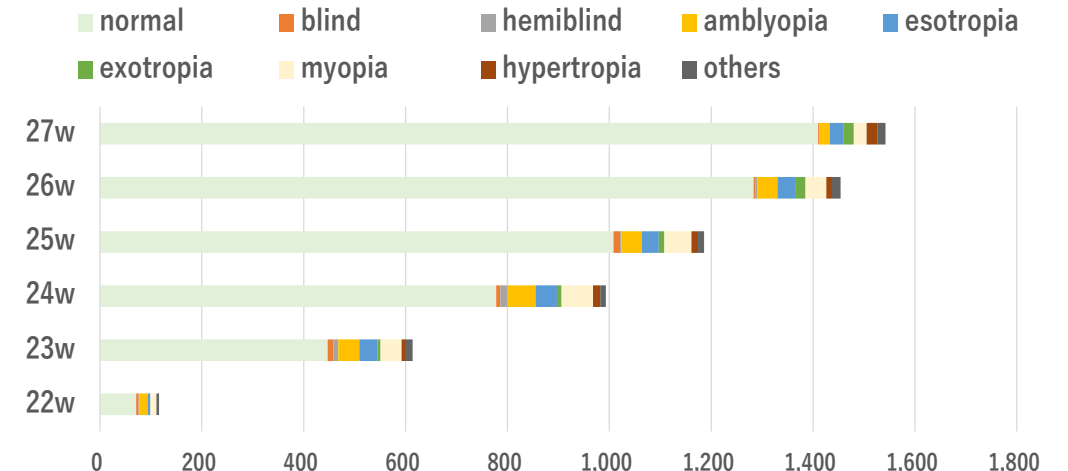
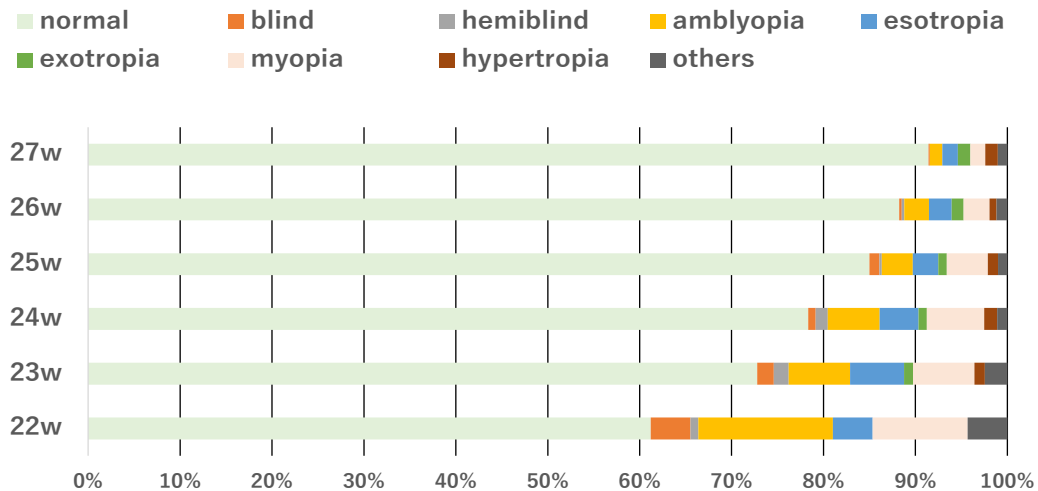
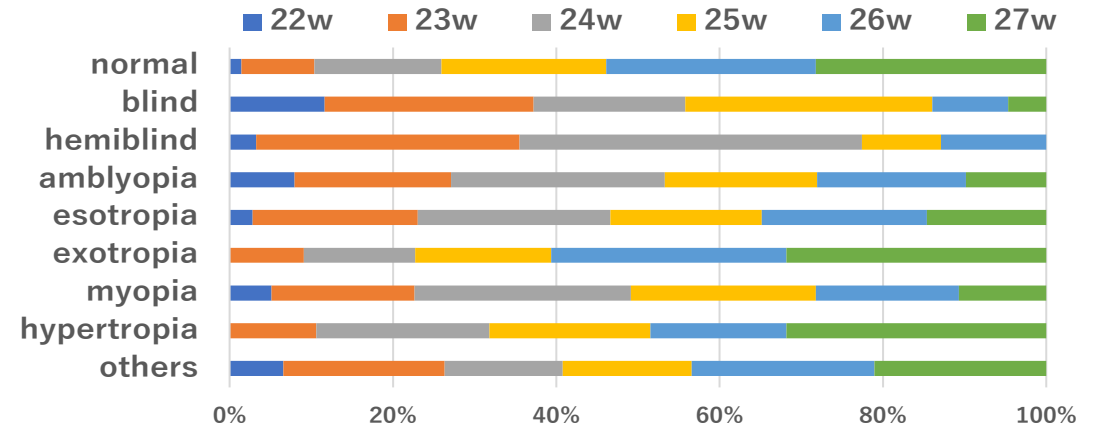
6,696



# Visual impairment (3 yrs)

◆ Details of visual impairments are shown according to gestational weeks of birth.  
 ◆ **1.3%** are blind or hemi-blind in extreme preterm infants <28w.

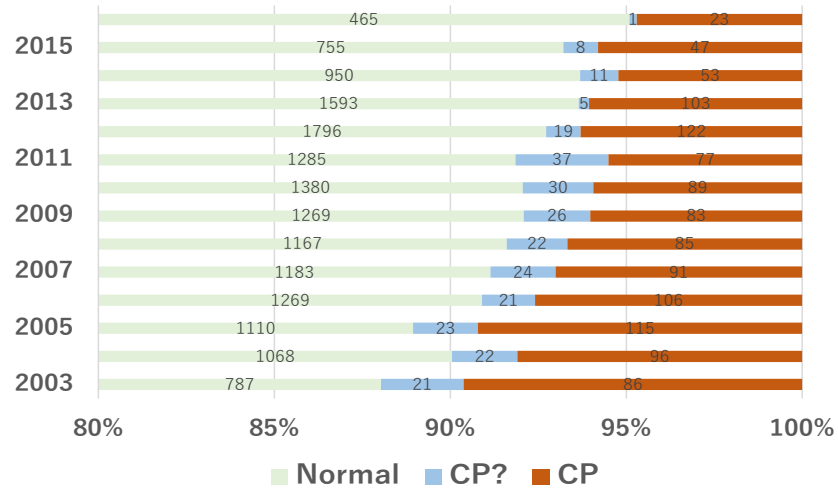
	22w	23w	24w	25w	26w	27w	Total
normal	71	447	778	1,008	1,283	1,410	4,997
<b>blind</b>	5	11	8	13	4	2	<b>43</b>
<b>hemibblind</b>	1	10	13	3	4		<b>31</b>
amblyopia	17	41	56	40	39	21	214
esotropia	5	36	42	33	36	26	178
exotropia		6	9	11	19	21	66
myopia	12	41	62	53	41	25	234
hypertropia		7	14	13	11	21	66
others	5	15	11	12	17	16	76
<b>Total</b>	<b>116</b>	<b>614</b>	<b>993</b>	<b>1,186</b>	<b>1,454</b>	<b>1,542</b>	<b>5,905</b>



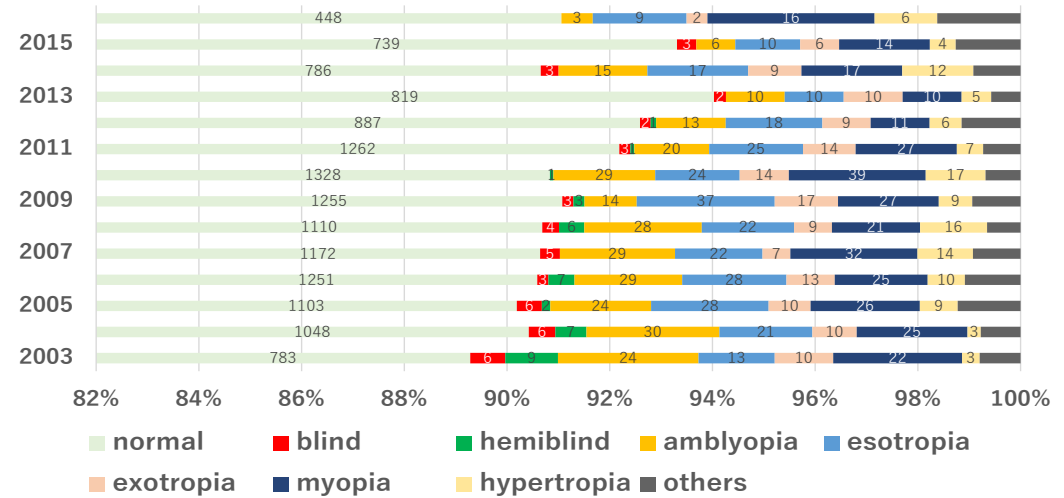
# Yearly Trend of Neurological Impairment

◆ The incidence of CP and visual impairments are decreasing, whereas small DQ and need of HA are increasing.

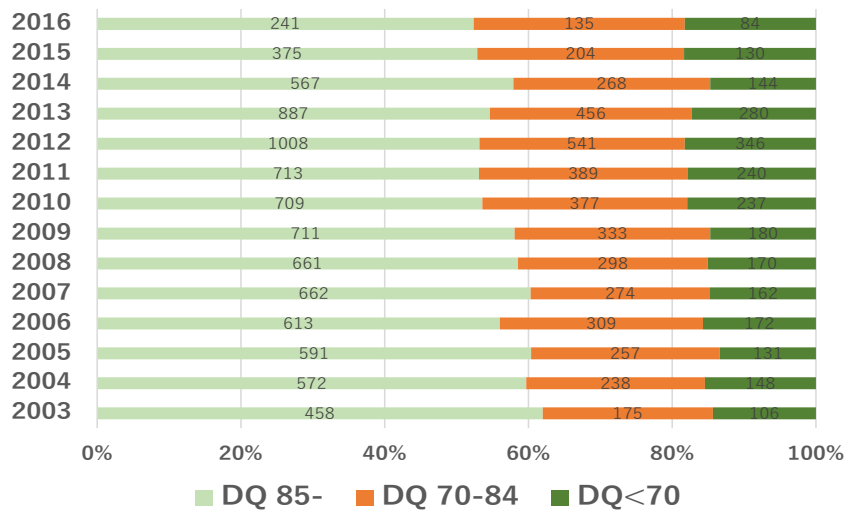
### Cerebral palsy



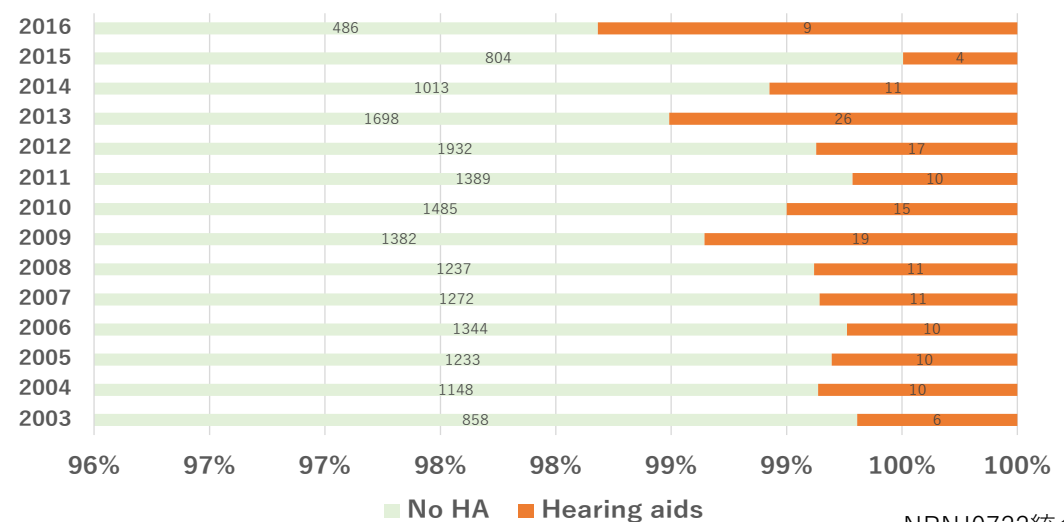
### Visual impairment



### DQ



### Hearing aids



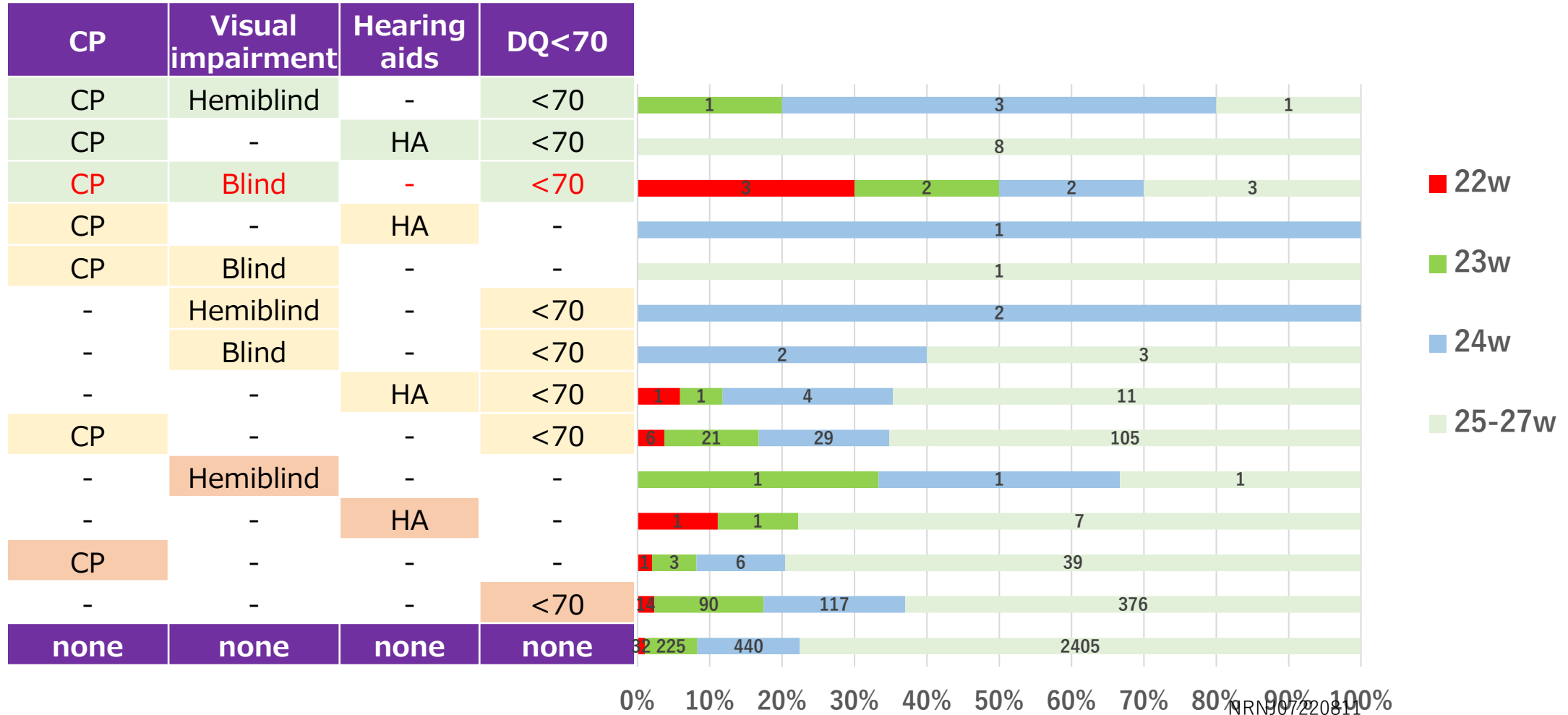
## Proportion of gestation in multiple disabilities (<28w, 3 years)

◆ Definition by NRN(delay : DQ<70, border : DQ70-84)

Hearing	Blind	CP	DQ	22w	23w	24w	25-27w	総計	22w	23w	24w	25-27w	Total
—	—	CP	<70	8	26	40	132	206	11.6%	6.5%	5.6%	4.0%	4.6%
—	—	CP	70-84	1	2	7	40	50	1.4%	0.5%	1.0%	1.2%	1.1%
—	—	CP	—		5	11	39	55	0.0%	1.2%	1.5%	1.2%	1.2%
—	—	—	<70	11	79	114	353	557	15.9%	19.6%	15.9%	10.6%	12.4%
—	—	—	70-84	12	95	149	564	820	17.4%	23.6%	20.8%	17.0%	18.2%
— Red Disability—				28	171	366	2,112	2,677	40.6%	42.4%	51.0%	63.6%	59.4%
—	Bilateral	CP	<70	4	3	2	5	14	5.8%	0.7%	0.3%	0.2%	0.3%
—	Bilateral	CP	70-84				1	1	0.0%	0.0%	0.0%	0.0%	0.0%
—	Bilateral	—	<70		2	3	3	8	0.0%	0.5%	0.4%	0.1%	0.2%
—	Hemi	CP	70-84		3	3	1	7	0.0%	0.7%	0.4%	0.0%	0.2%
—	Hemi	CP	70-84		1		0	1	0.0%	0.2%	0.0%	0.0%	0.0%
—	Hemi	—	<70		2	4	2	8	0.0%	0.5%	0.6%	0.1%	0.2%
—	Hemi	—	70-84		2	1	1	4	0.0%	0.5%	0.1%	0.0%	0.1%
—	Hemi	—	—	1	1	2	1	5	1.4%	0.2%	0.3%	0.0%	0.1%
Hearing	—	CP	<70	1	3	5	14	23	1.4%	0.7%	0.7%	0.4%	0.5%
Hearing	—	CP	70-84				1	1	0.0%	0.0%	0.0%	0.0%	0.0%
Hearing	—	CP	—			1	1	2	0.0%	0.0%	0.1%	0.0%	0.0%
Hearing	—	—	<70	2	2	4	14	22	2.9%	0.5%	0.6%	0.4%	0.5%
Hearing	—	—	70-84	1	3	3	13	20	1.4%	0.7%	0.4%	0.4%	0.4%
Hearing	—	—	—		2	3	21	26	0.0%	0.5%	0.4%	0.6%	0.6%
Hearing	Bilateral	CP	<70		1		2	3	0.0%	0.2%	0.0%	0.1%	0.1%
Total				69	403	718	3,320	4,510	100.0%	100.0%	100.0%	100.0%	100.0%

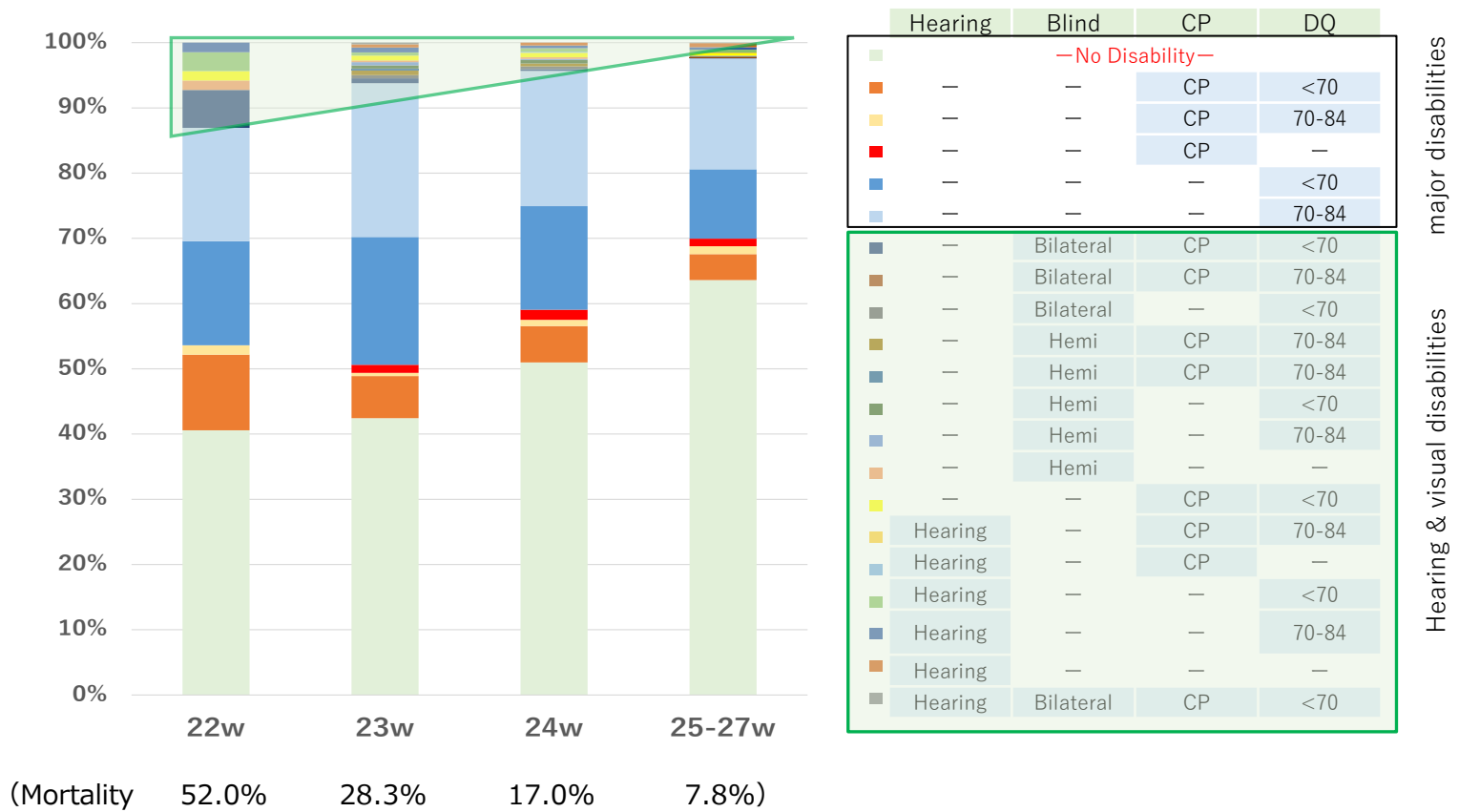
## Proportion of gestation in multiple disabilities (<28w, 3 years)

- ◆ Proportion of gestation in groups of multiple disabilities are shown in percentage.
- ◆ The CP, Blind, DQ<70 combination is 30% for 22w, followed by 23w, 24w.



## Multiple disabilities of extremely preterm infants (<28w, 3 years)

- ◆ Combinations of disabilities of ex-preterm (<28w) with major disabilities at 3 years are illustrated with specific colors.
- ◆ The large mortality of 22w relates to relative small proportion of disabilities comparing to “No disability”.



## Ratio of gestation and groups of multiple disabilities (<28w, 3 years)

◆ DQ<70 is the largest disability followed by CP and DQ<70. In Isolated CP gestation groups are similar in ratio

CP, Blind –bilateral, Hearing aid, DQ<70			
-unilateral			
CP	-	HA	<70
CP	Blind	-	<70
-	Blind	-	<70
-	-	HA	<70
<b>CP</b>	-	-	<b>&lt;70</b>
CP	-	HA	-
CP	Blind	-	-
-	-	-	<b>&lt;70</b>
-	-	HA	-
-	Blind	-	-
<b>CP</b>	-	-	<b>-</b>
<b>No disabilities</b>			
22w (54.2%), 23w (64.7%), 24w (71.5%), 25-27w (80.4%)			

