

Restoring the Original Paradigm for Infant Care



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"Restoring the original paradigm"

What is a paradigm?

Our world view

Set of basic assumptions

Our belief system

Things we just know and
don't question!

What is a paradigm?



The American Heritage® Dictionary of the English Language: Fourth Edition. 2000.

paradigm 3. A set of assumptions, concepts, values, and practices that constitutes a way of viewing reality for the community that shares them, especially in an intellectual discipline.

PARADIGM CONSTRUCT

Paradigm: "in the philosophy of science, a generally accepted model of how ideas relate to one another, forming a conceptual framework within which scientific research is carried out"

MSN Encarta

What is a paradigm?



[Kuhn, T S; The Structure of Scientific Revolutions, 2nd Ed., Univ. of Chicago Press, Chicago & London, 1970, p.175].

Kuhn defines a paradigm as:

“an entire constellation of beliefs, values and techniques, and so on, shared by the members of a given community”

What determines a paradigm ??

Tradition

Culture

Experience

Research

Science



Culture

Experience

Research

Science

PARADIGM CONSTRUCT

Paradigm has internal

Intelligence

Honesty

Integrity

Consistency

BASIC ASSUMPTIONS:

FOUNDATION / PLATFORM / BASE

PARADIGM CONSTRUCT

Biomedical model: reductionist
Odent's "circular research"

If challenges paradigm:
Odent's "cul-de-sac research"

Stephane TARNIER

1828 -97

French obstetrician

WHY
DO WE
SEPARATE
BABIES
FROM
MOTHERS ???

Saw a warmed box for hatching chickens, had one designed for "weaklings" ...
... invented incubator

Pierre BUDIN 1846 - 1907

Friend of Tarniers ...took
Incubators, made centres
for the care of weaklings,
wrote book on subject.

Political support ...
France versus Germany

BUDIN was very particular to include
mother, reason for the glass window

Martin COUNEY 1860 - 1950

German born, learnt of incubator from Budin, took "hatchery" to Exhibitions, famous for "preemie road show".

Berlin 1896, Buffalo → Omaha 1902-4, Chicago Fair 1932 2nd highest receipts, Last show New York 1940.

Equal parts P.T. Barnum-style circus sideshows and World's Fair wonders, **Dreamland delivered novel and fantastic diversions of the odd and unusual.** It was the home to scientific, ethnological and cultural exhibits, **including Dr. Coney's Baby Incubator pavilion,** which had been shown at the 1901 Buffalo Exhibition and the St. Louis Pike (seen here).

Catering to the public's endless fascination with oddities and freaks, Dreamland had, as one of its main attractions, "Lilliputia,"

Martin COUNEY 1860 - 1950

Couney successfully
raised 5000 prems!

BUT -

used wet-nurses,
excluded mothers

(mother got free pass to the shows !)

Mothers were excluded - "germs" ...

Sarah Morris Hospital, Chicago 1923,
others followed - all with a
“policy of strict separation”.

With the advent of artificial infant
formula, mother not needed at all !!

Habitat AND niche now synthetic !!

Culture

Experience

Research

Science

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WHAT IF BASIC ASSUMPTION FALSE ??

Gunnar Sedin

Focus on ELBW

"increasing survival"
decreasing sequelae

Current record 22 wk GA

Current record 244 g

Rumaisa went home 9th February 2005

Sequelae are in fact huge

Comment

Though our survival is amazing ...
our sequelae are objectively speaking
HORRIFIC.

our measures / parameters
for sequelae have
high specificity and
low sensitivity

Archie COCHRANE 1909 1988

Any intervention
should be subject to
RANDOMISED
CONTROLLED TRIAL
and meta-analysis ...

EVIDENCE BASED
MEDICINE.

Origin of BIRTH K M C

Drs Rey & Martinez

1979 Bogota, Colombia

LATE K M C

1985 Andrew Whitelaw

1987 Agneta Jurisoo

BIRTH K M C

Andrew Whitelaw (Lancet 1985)

“The myth of the marsupial mother”

Survival 89%

“but figures misleading because omitted babies who died in first few days”

Valuable in developing countries

Colombia has nothing to teach developed countries about survival

Andrew Whitelaw & Katherine Sleath

11000 births annually, overcrowded
cross-infections → poor survival

“kangaroo babies” :

At birth: incubator, conventional care,

“ ... do not see this as an alternative to

conventional care ... babies need to

survive hazards of first few days in

order to enter programme” → 1/3 do!

DEFINITION of KMC (1990)

MANAMA, ZIMBABWE

- # Skin-to-skin contact
from birth, continuous
- # Breastmilk from birth
& exclusive breastfeeding
- # Psychological support
to mother

KMC as above used regardless of weight and gestation.

KMC provides the baby with very intensive care.

KC (in the USA) - In-hospital skin-to-skin contact, any duration, primarily adjunct to CMC (Conventional Method of Care).

Results - Manama

(Infants 1000g to 1500g)

Survival pre KMC 10%

Survival with KMC 50%

Weight gain / day 24g/d

Breastfeeding rate 100%

(Worku & Rassie 2005)

Addis Ababa, Ethiopia

Unstable newborns 1000 - 2000g
SSC started average 10h hours age
(access issues, referral times)

	<u>KMC</u>	<u>CMC</u>	<u>Less</u>
Time to stabilise	4.6 d	5.4d	
Mortality	23%	39%	40%
if start <6h	17%	48%	65%
if start >6h	26%	32%	8%

Is there an alternative for premature infants ??

Bergman et al 2004

Worku et al 2005

Physiological adjustment
(transition) requires 6 hours

SSC in the first 6 hours

No separation before this !!!

EVIDENCE BASED MEDICINE.

The INCUBATOR was

standard Care for prems by **1940**

The Randomised Controlled

TRIAL was "invented" by **1960**

Birth Kangaroo Mother Care

was "discovered" in **1990**

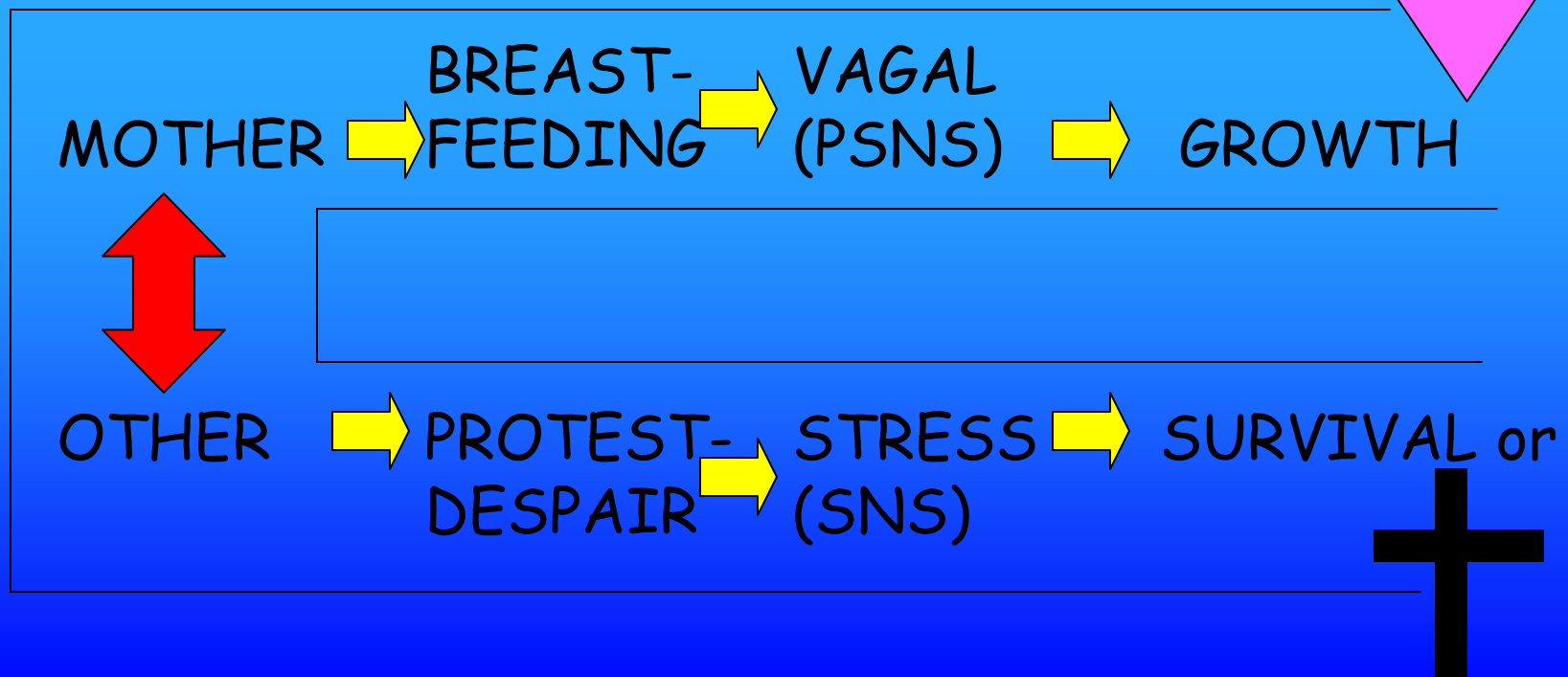
First RCT comparing birth KMC

to incubator started in **2000**

"Habitat - niche hypothesis"

How would YOU design an RCT?

HABITAT NICHE MEANS RESULT



Reference

RCT of skin-to-skin contact from birth versus conventional incubator care for physiological stabilisation in 1200- and 2199-gram newborns.

Bergman NJ, Linley LL, Fawcus SR.
Acta Paediatrica 2004
Vol 93(6); 779-785

Primary hypothesis

SSC (skin-to-skin contact)
from birth is superior
to incubator care for
low birthweight infants

ONLY HABITAT DIFFERS

BAILOUT points

"physiological parameters exceeding normal limits, requiring medical assessment and or intervention"

- 1 Skin temp consistently $<35.5^{\circ}\text{C}$
- 2 Heart rate <100 ; or > 180 bpm
- 3 Apnoea longer than 20 seconds
- 4 O_2 sats below 89% (x2), (CPAP/60% O_2)
- 5 Blood glucose $< 2,6\text{mmol/l}$, (laboratory)

“Stability of Cardio-Respiratory system In Preterm Infants” (Fischer et al, 1988)

SCRIP SCORE	2	1	0
Heart rate	Regular	Deceleration to 80-100	Rate <80 or >200 bpm
Respiratory rate	Regular	Apnoea <10s, or periodic breathing	Apnoea >10s Tachypnoea >80 pm
Oxygen saturation	Regular >87%	Any fall to 80 - 87%	Any fall below 80%

Score allocated for a five minute period of continuous observation, maximum six for period

H1b In the first six hours, SSC will have fewer bailout points than CMC

SSC
83% OK

STABLE

SSC	83%	15/18
CMC	8%	1/13

Incubator
8% OK

Research hypotheses

H2b During the sixth hour,
"SCRIP" better with KMC (24pts)

	KMC	CMC	t-test
	(n = 18)	(n = 13)	
SCRIP 6th hour (mean)	24.0	23.0	0.012
(Std deviation)	0	1.22	
Perfect score24	18 (100%)	6 (46%)	

H2a Through the six hours,
"SCRIP" better with KMC (78pts)

Subanalysis <1800g

SCRIP	KMC (n = 9)	CMC (n = 4)	t-test
SCRIP first six hours (mean)	76.67	71.75	0.049
(standard deviation)	1.5	6.65	
Number perfect score (78)	4 (44%)	0 (0%)	

H2b During the sixth hour,
"SCRIP" better with KMC (24pts)

Subanalysis <1800g

SCRIP	KMC (n = 9)	CMC (n = 4)	t-test
SCRIP in 6 th hour (mean)	24.0	22.25	0.008
(standard deviation)	0	1.71	
Number perfect score (24)	9 (100%)	1 (25%)	

CONCLUSION

SSC started
from birth,
is superior
to incubator

for infants 1200 - 2199g , with respect to
stabilisation as defined by basic physiological
parameters, (HR, RR, Ox sats, Dx, apnoea).

INCUBATORS
DE-STABILISE
NEWBORNS

SSC is safer!

EVIDENCE FOR

SAFETY OF INCUBATORS ...

DOES NOT EXIST!

The evidence is assumed,
taken for granted!
It is part of our paradigm.

EVIDENCE FOR

SAFETY OF INCUBATORS ...

We know their use to achieve
thermal control and appropriate
humidity ...

... but we've neglected the brain !

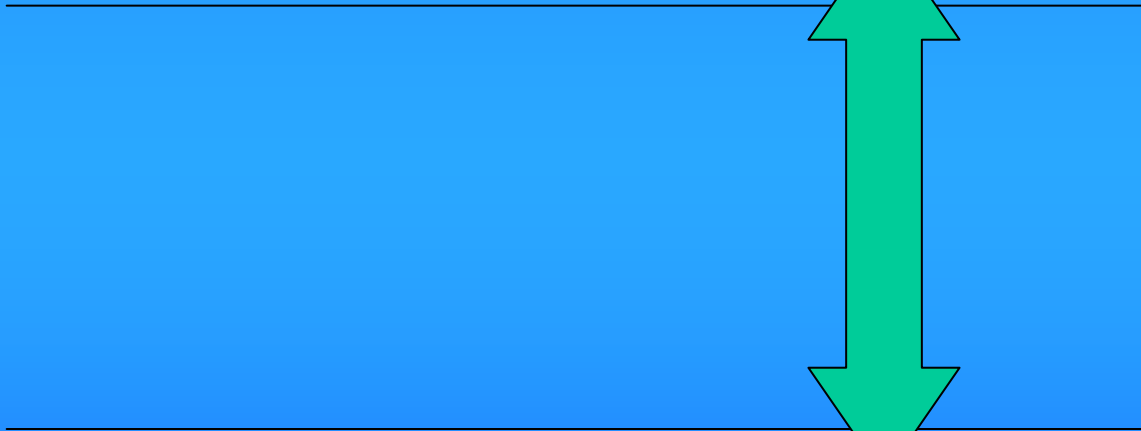
INTERVENTION DOES :

GOOD

LITTLE

HARM

PRIMUM NON NOCERE



Julian Huxley,
... to his students,
... circa 1900.

“During the next century,
half of what we know now
will be proven wrong.

Unfortunately, we don't know which half.”

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BASIC ASSUMPTIONS:

FOUNDATION / PLATFORM / BASE

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helpless, clueless, useless

Brain: genes / linear / regenerates / human cortex

Oxygen / Incubators / Survival / RCT-policy

FORMULA FEEDING IS GOOD ALTERNATIVE

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help~~X~~less, clue~~X~~less, use~~X~~less

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Current paradigm versus NEW: Infant brain development

1. Genetically determined
2. Develops in linear time
3. Activity increases w age
4. Mother = good context
5. Deficits correctable later

EXPERIENCE

CRITICAL PERIOD

GREATEST 3 yrs

= WIRES BRAIN

Limbic FIXED at 3y

BASIC ASSUMPTIONS:

helpless, clueless, useless

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FOUNDATION / PLATFORM / BASE

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Oxygen / Incubators / Survival / RCT-policy

Ola Saugstad

AAP recommends resus with 100% oxygen !!!!

RCT of resus comparing 100% with room air ,
CVS better room air,

mortality room air	14%
mortality 100% oxygen	19%

Even brief exposure to oxygen is toxic !

“Are BPD, CLD, ROP, NEC all manifestations of
oxygen radical disease of newborn?”

BASIC ASSUMPTIONS:

helpless, clueless, useless

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FOUNDATION / PLATFORM / BASE

help~~X~~less, clue~~X~~less, use~~X~~less

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Oxy~~X~~gen / Incubators / Survival / RCT-policy

**KANGAROO MOTHER CARE
FROM BIRTH
COMPARED TO CONVENTIONAL
INCUBATOR CARE**

Nils Bergman

Lucy Linley, Sue Fawcus
Mowbray Maternity
Cape Town, RSA.

BASIC ASSUMPTIONS:

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Oxy~~X~~gen / Incu~~X~~bators / Survival / RCT-policy

“There is currently great emphasis on grounding medical practice on sound research evidence.”

.... the most credible research on health care outcomes is from randomised, controlled, double blind clinical trials.”

Declaration of Alma-Ata on Primary Health Care

... based on

**practical,
scientifically sound
socially acceptable**

methods and technology made
universally accessible ...

Primary Health Care:

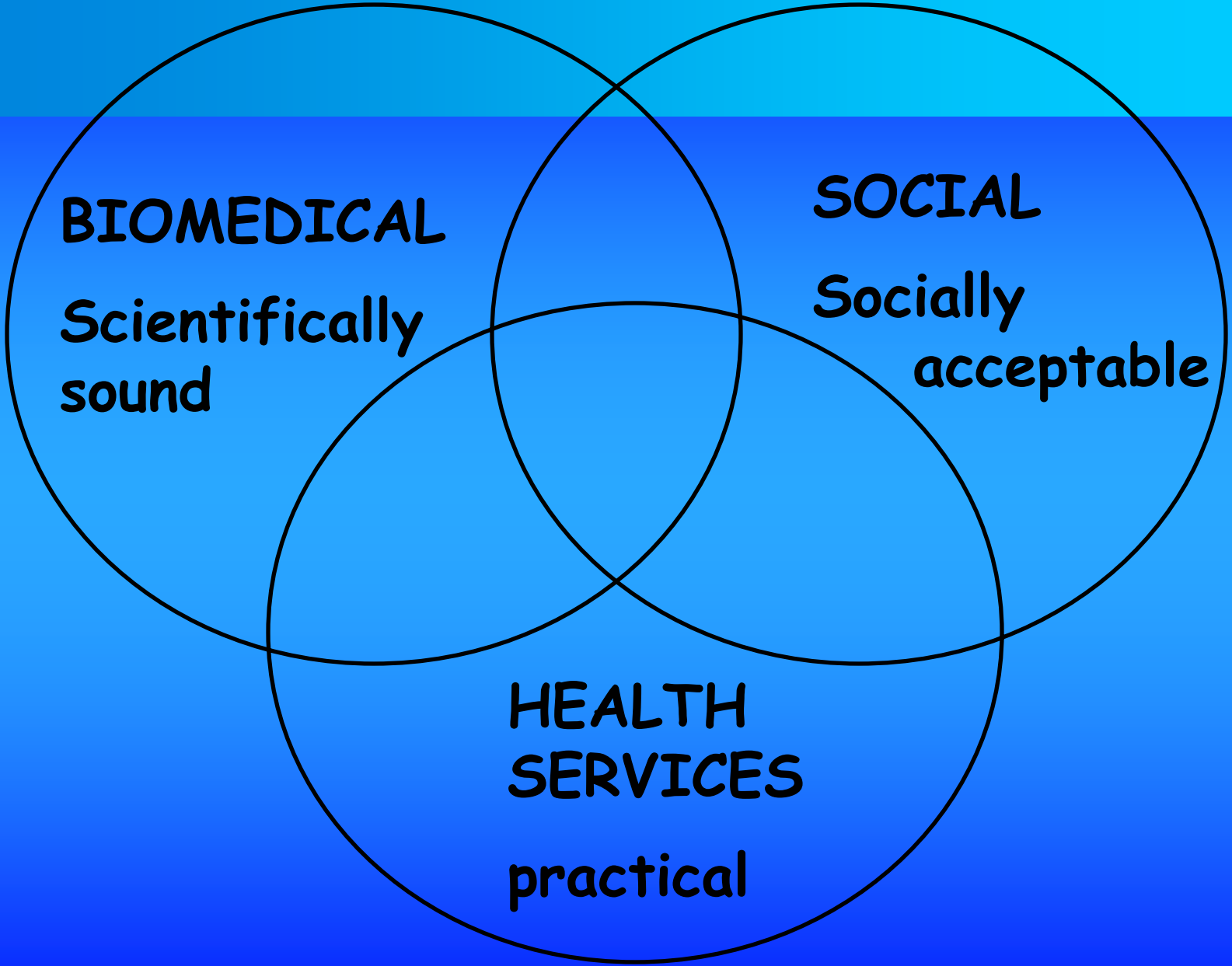
... is based on the application of relevant results of

social,

biomedical

health services research

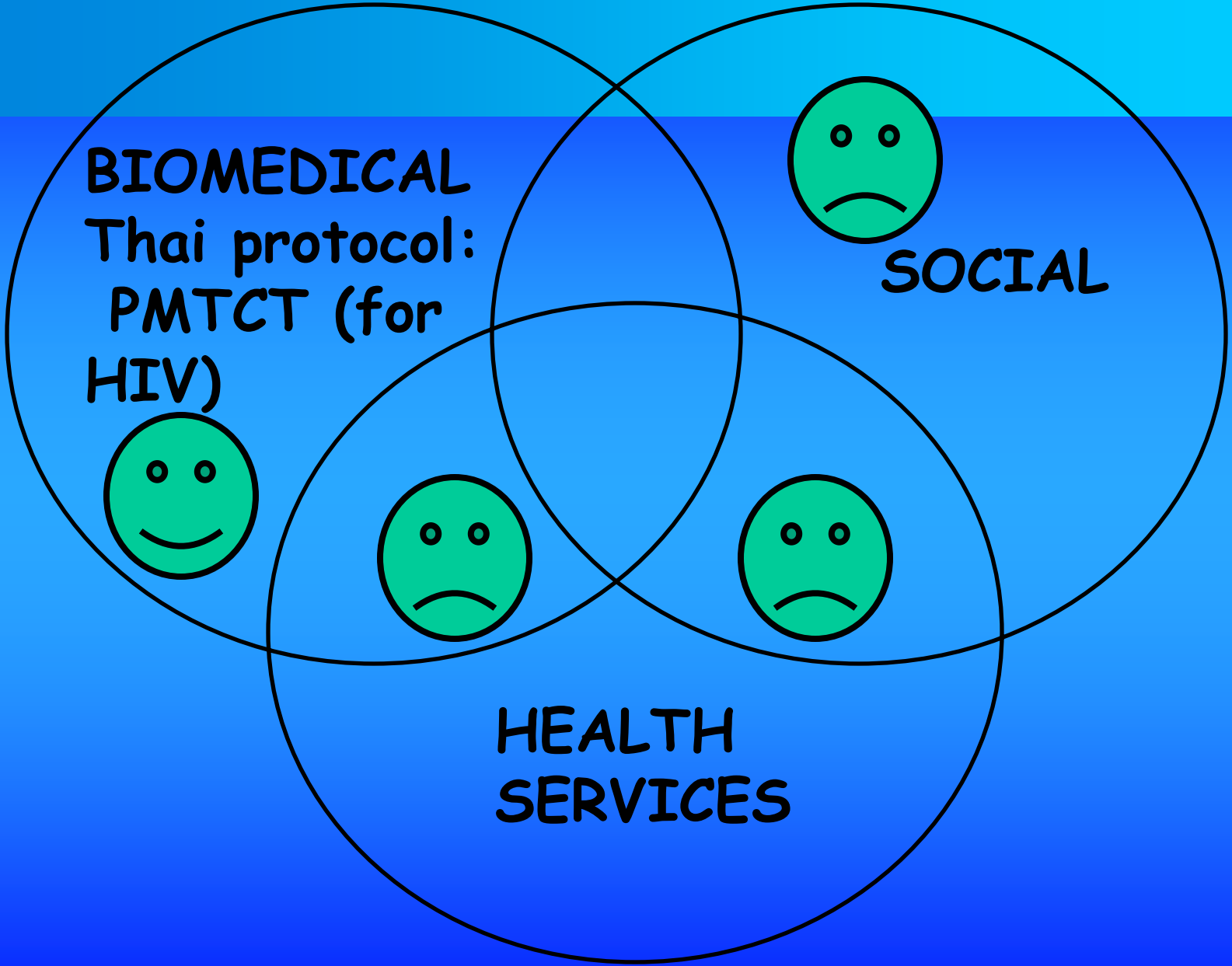
and public health experience



BIOMEDICAL
Scientifically
sound

SOCIAL
Socially
acceptable

**HEALTH
SERVICES**
practical



Thai protocol:

PMTCT (for HIV):

scientifically sound

YES - BUT NOT

practical,

socially acceptable

Primary Health Care:

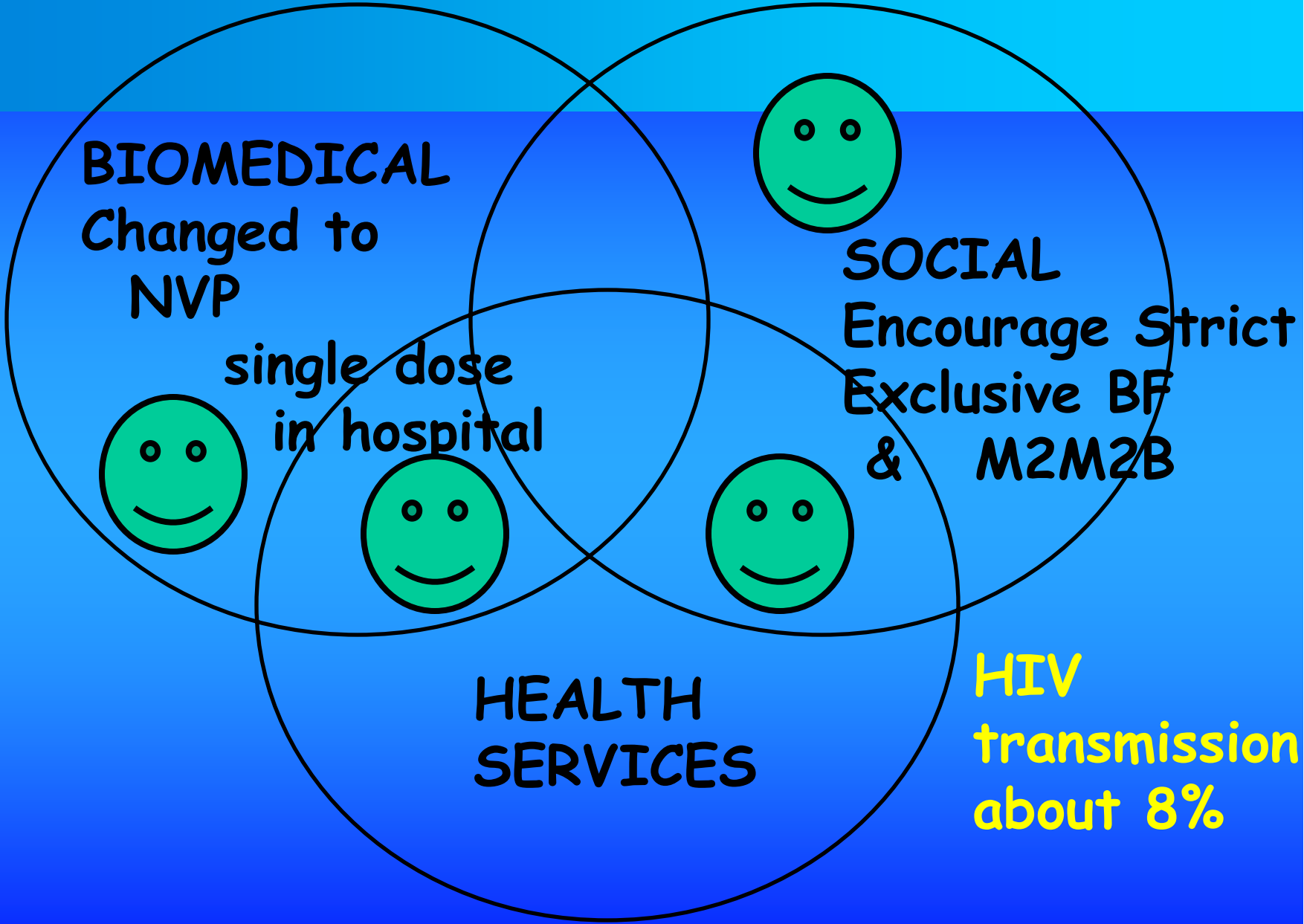
... is based on the application of relevant results of

biomedical research

YES - BUT ALSO

social research , and

health services research



“There is currently great emphasis on grounding medical practice on sound research evidence.”

.... the most credible research on health care outcomes is from randomised, controlled, double blind clinical trials.”

= FALSE ASSUMPTION !!

Primary Health Care:

... is based on the application of relevant results of

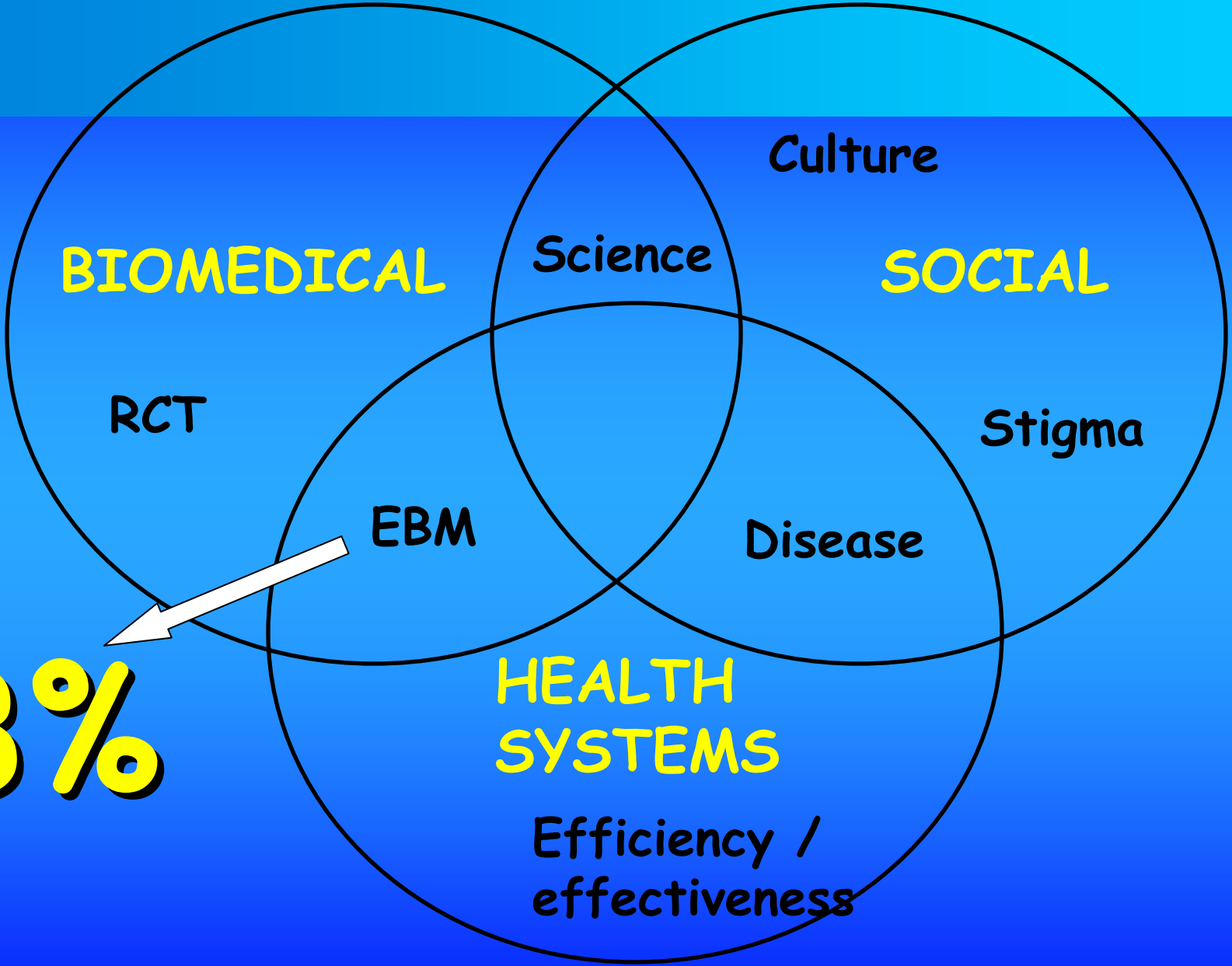
biomedical research

YES - BUT ALSO

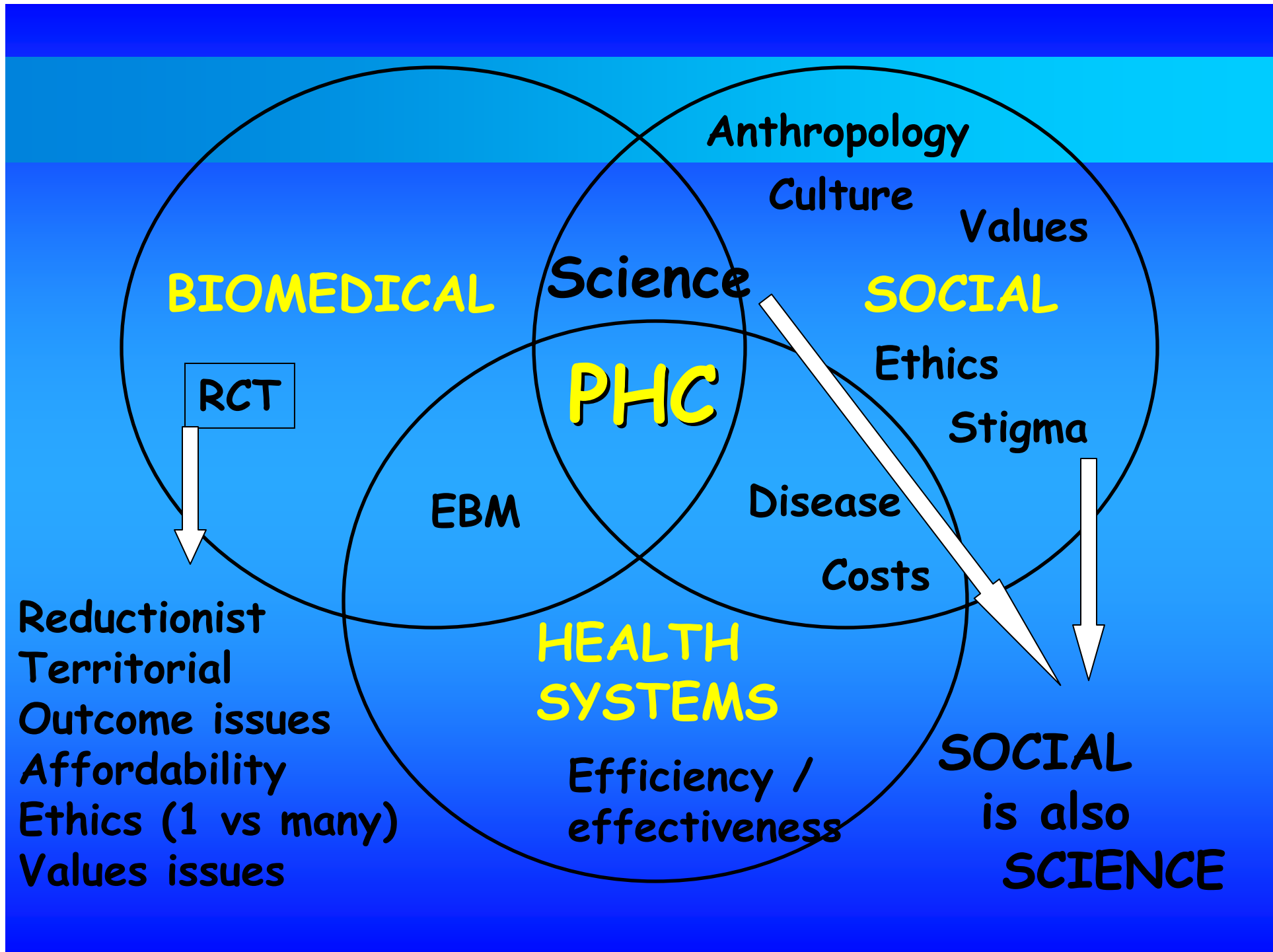
social research , and

health services research

**The biomedical paradigm
IS TOO NARROW !!**



8%



"Why do doctors use treatments that do not work?"

- Clinical experience
- Over-reliance on surrogate outcome
- Natural history of the illness
- Love of the pathophysiological model (that is wrong)
- Ritual and mystique
- A need to do something
- No one asks the question
- Patients' expectations (real or assumed)

BASIC ASSUMPTIONS:

helpless, clueless, useless

Oxygen / Incubators / Survival / RCT-policy

Brain: genes / linear / regenerates / human cortex

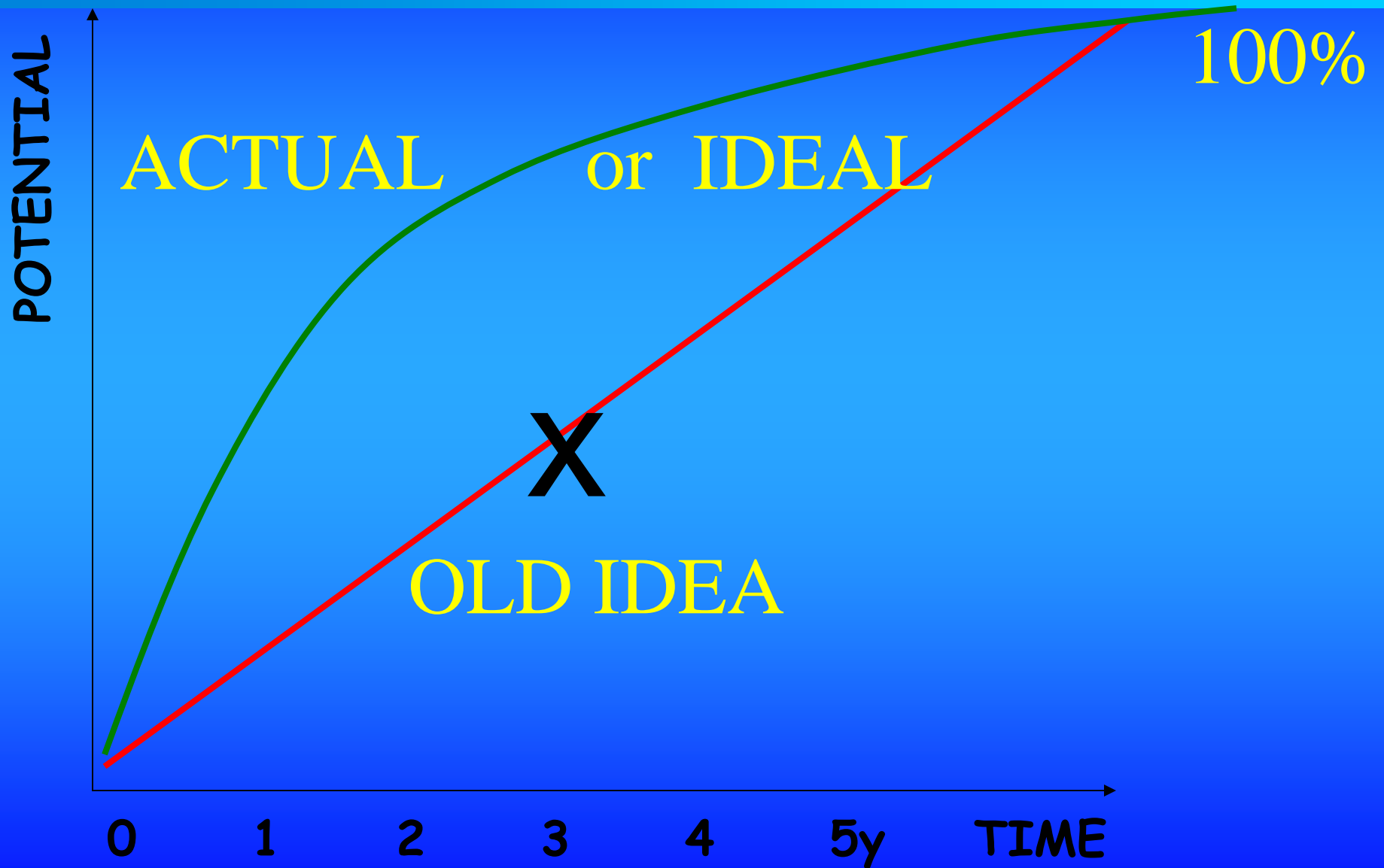
FOUNDATION / PLATFORM / BASE

help~~X~~less, clue~~X~~less, use~~X~~less

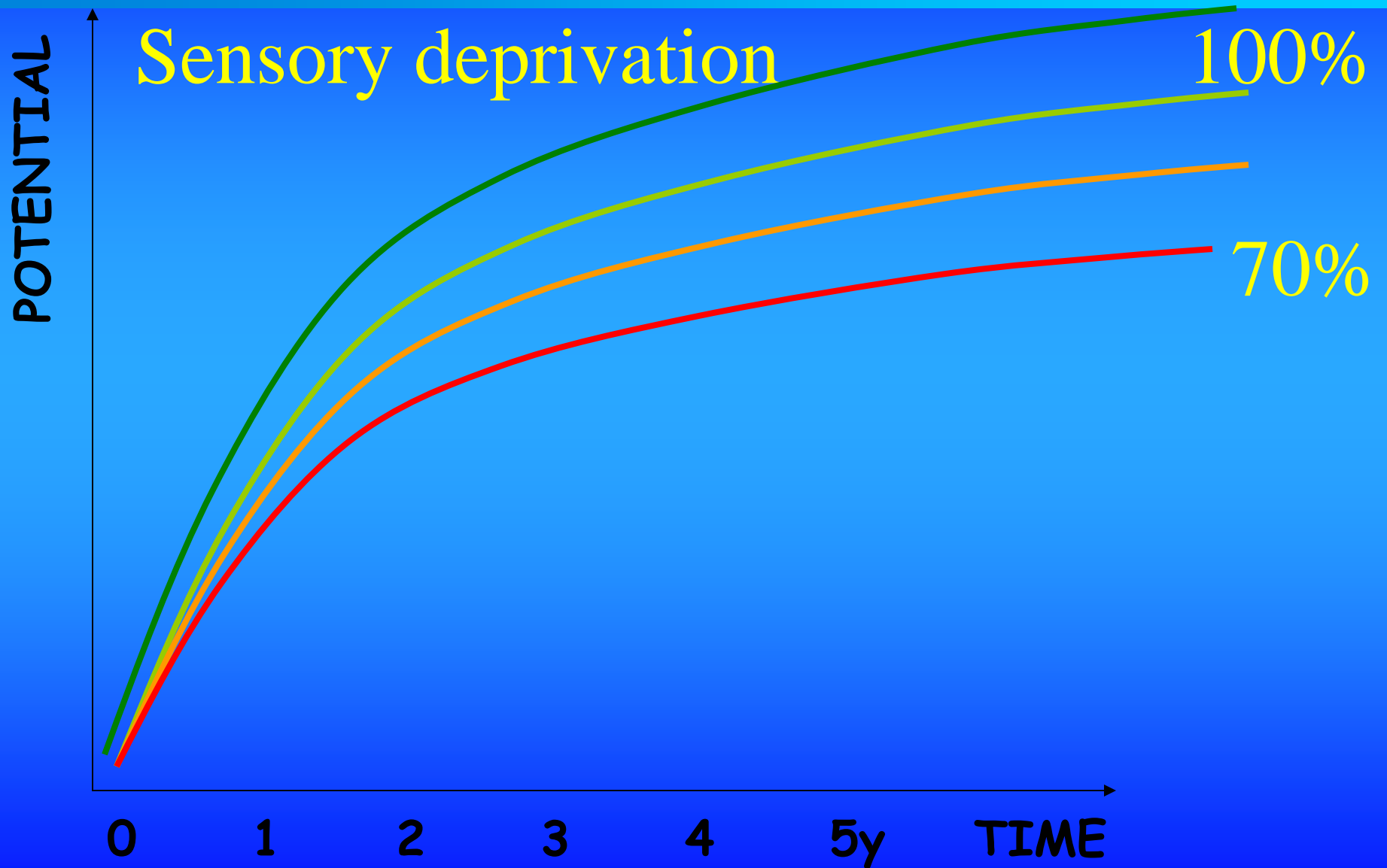
Brain: ge~~X~~nes / li~~X~~near / rege~~X~~nerates / huma~~X~~n cortex

Oxy~~X~~gen / Incu~~X~~bators / Survival / RCT~~X~~policy

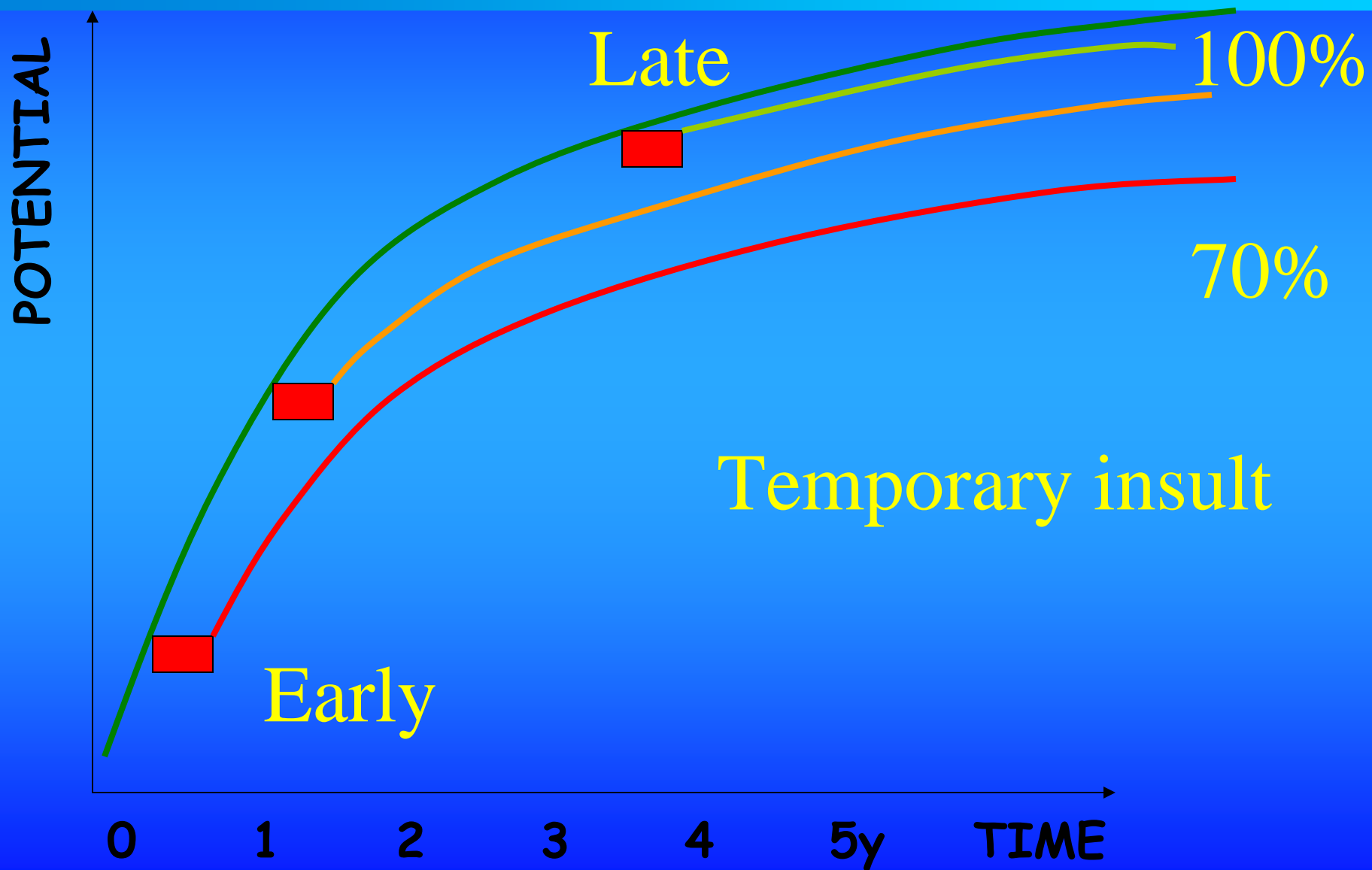
Infant brain development



Infant brain development

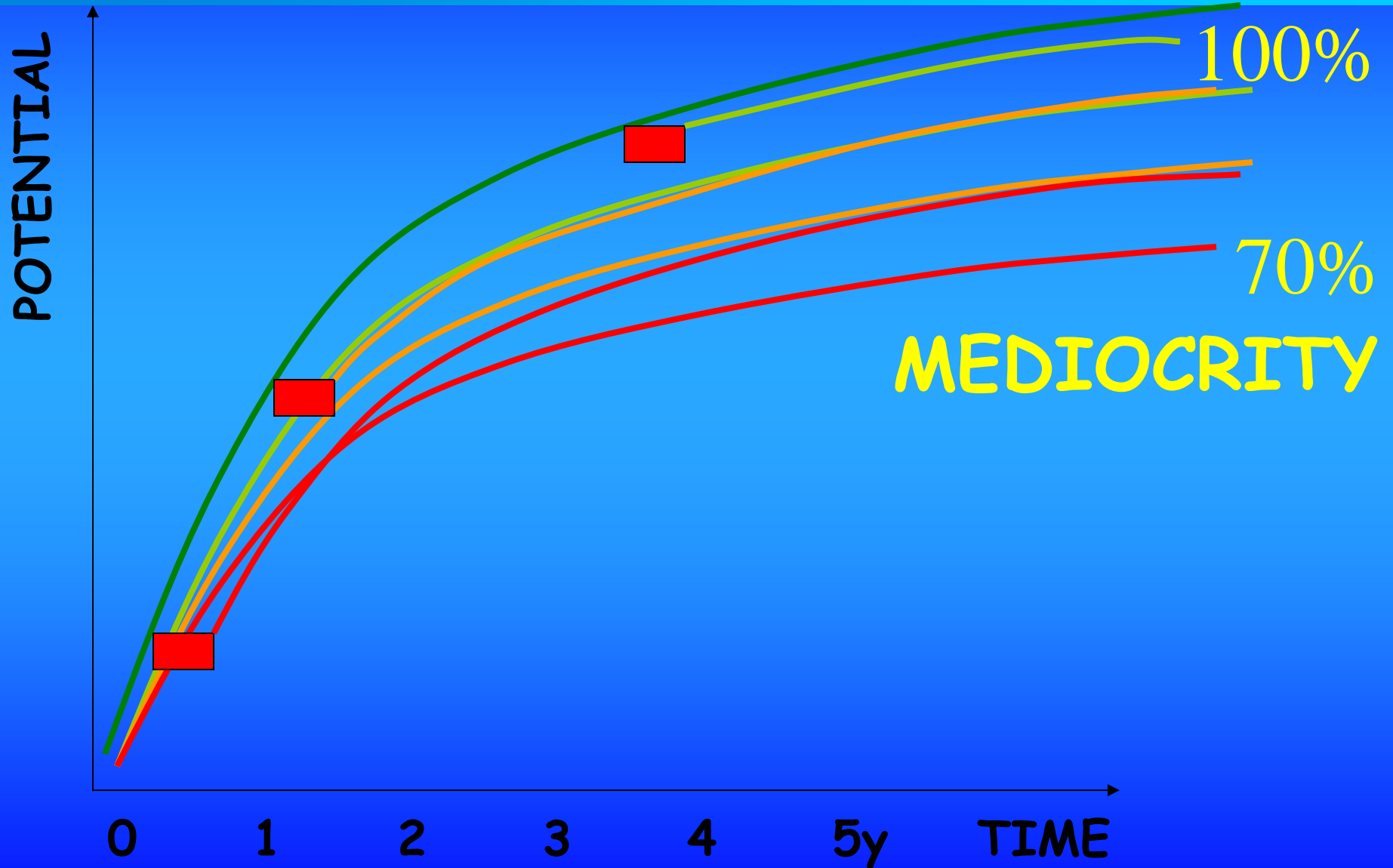


Infant brain development



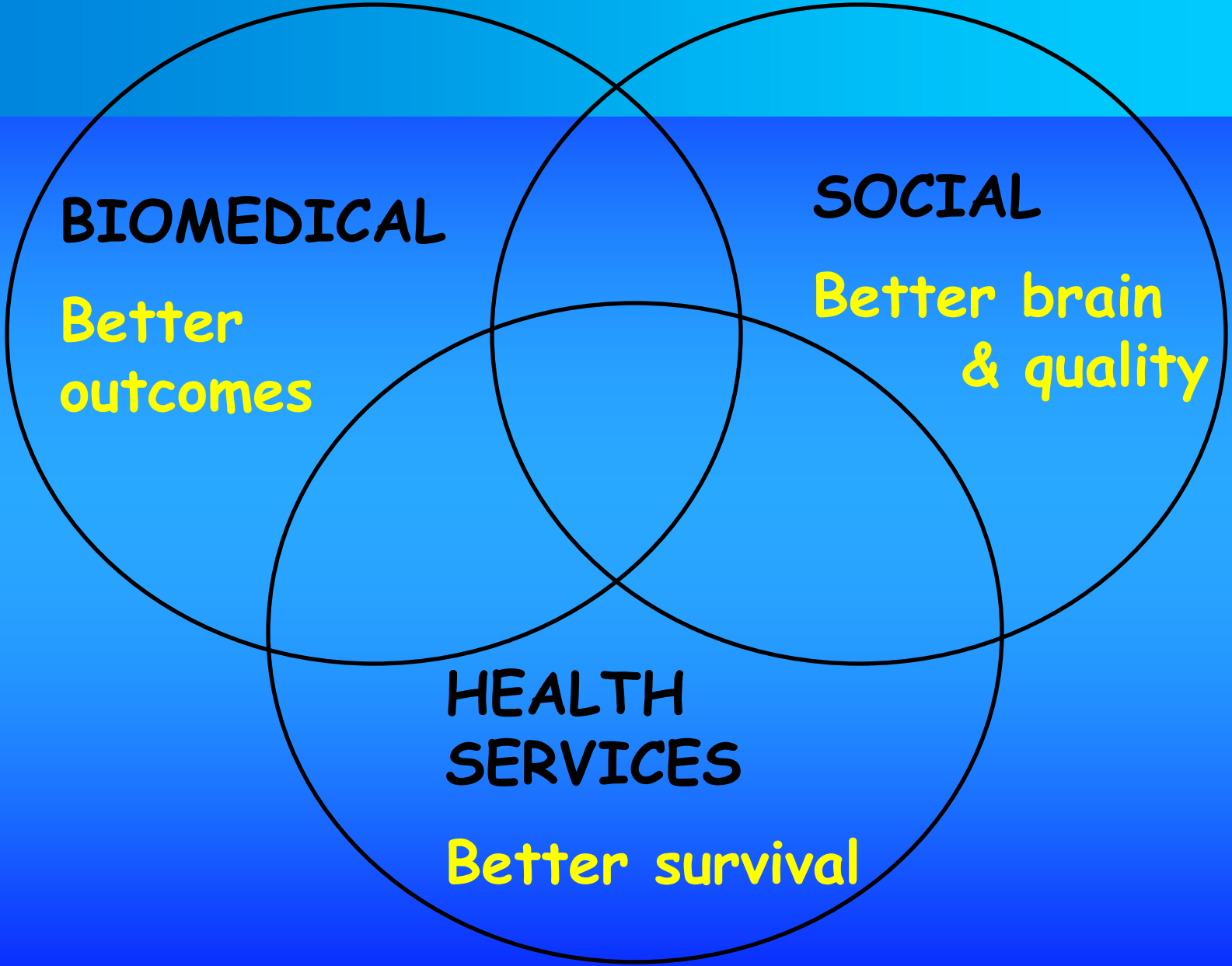
Infant brain development

EXCELLENCE



"Why do doctors
use treatments
that do not work?"

- Over-reliance on
surrogate outcome



BIOMEDICAL

**Better
outcomes**

SOCIAL

**Better brain
& quality**

**HEALTH
SERVICES**

Better survival

BASIC ASSUMPTIONS:

helpless, clueless, useless

Oxygen / Incubators / Survival / RCT-policy

Brain: genes / linear / regenerates / human cortex

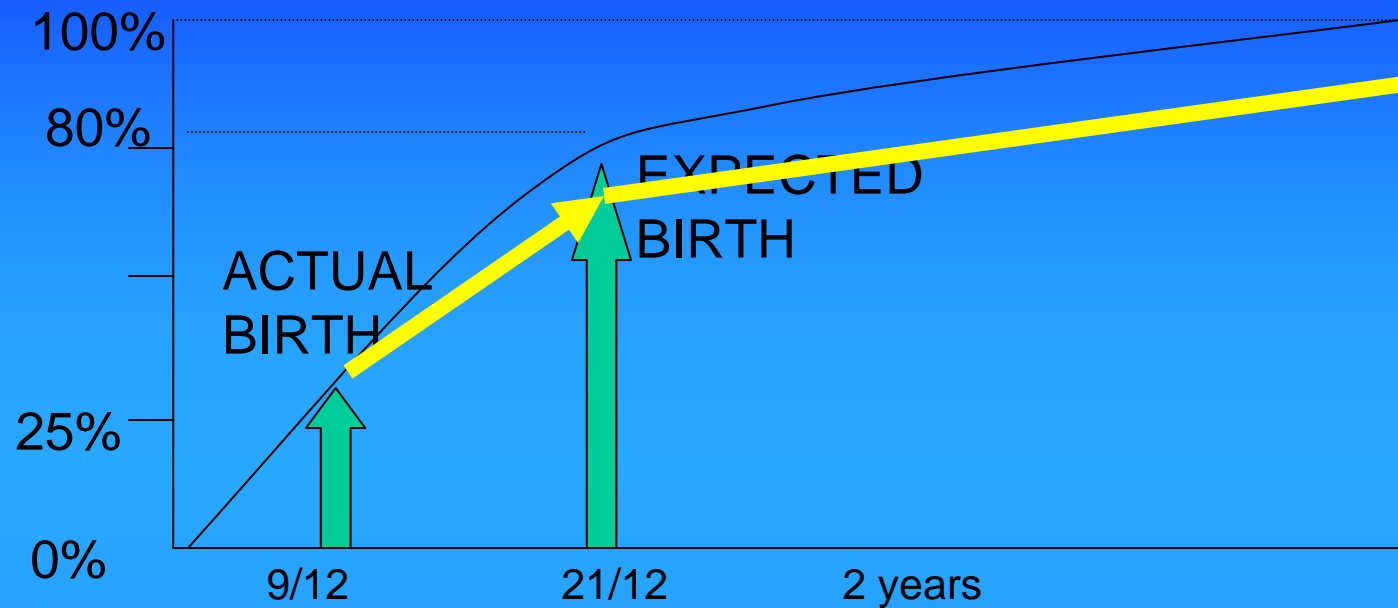
FOUNDATION / PLATFORM / BASE


help~~X~~less, clue~~X~~less, use~~X~~less

Brain: ge~~X~~nes / li~~X~~near / rege~~X~~nerates / huma~~X~~n cortex

Oxy~~X~~gen / Incu~~X~~bators / Sur~~X~~vival / RCT~~X~~policy

BRAIN GROWTH & BREASTFEEDING



 **Formula !**

BASIC ASSUMPTIONS:

The introduction of artificial infant feeding
preceeded the scientific rigor and
randomised controlled trials

helpless, clueless, useless

Brain: genes / linear / regenerates / human cortex

Oxygen / Incubators / Survival / RCT-policy

~~FORMULA FEEDING IS GOOD ALTERNATIVE~~

**“Current neuroscience and recent research have
-disproved the assumptions,
-destroyed the platform,
on which modern neonatal care has been built.”**

Nils Bergman 2006

"One of the greatest pains
to human nature,
is the pain of a new idea."

Walter Bagehot (1826 - 1877)

(from Walrus June 2005)

"Loss of belief system"

Stages of grief or any loss ??

Elizabeth Kubler Ross

Denial → Anger → Blame →

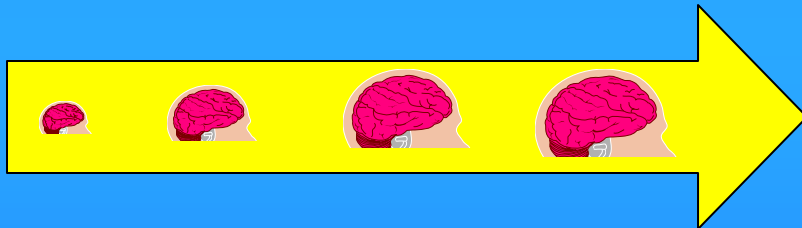
Bargaining → Despair →

Acceptance → **Purpose**

(Bergman)

NEW PARADIGM CONSTRUCT

Brain based paradigm
Brain stimulation !!
Brain based behaviour



BASIC ASSUMPTION:

NEVER SEPARATE !!

FOUNDATION / PLATFORM / BASE

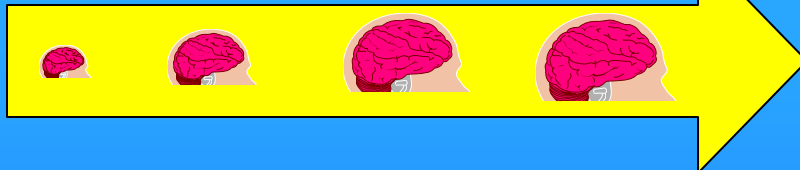
NEW PARADIGM CONSTRUCT

SUPPORT TO THE DYAD

Maternal
care

BREASTFEEDING

Nurture



SSC

Stimulation

BASIC ASSUMPTION:

NEVER SEPARATE !!

FOUNDATION / PLATFORM / BASE

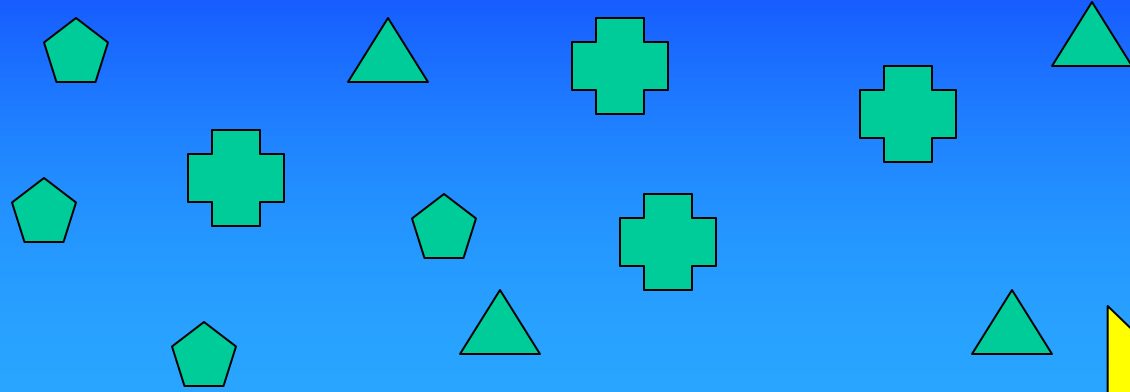
KANGAROO MOTHER CARE = THE ORIGINAL PARADIGM

Skin-to-skin contact

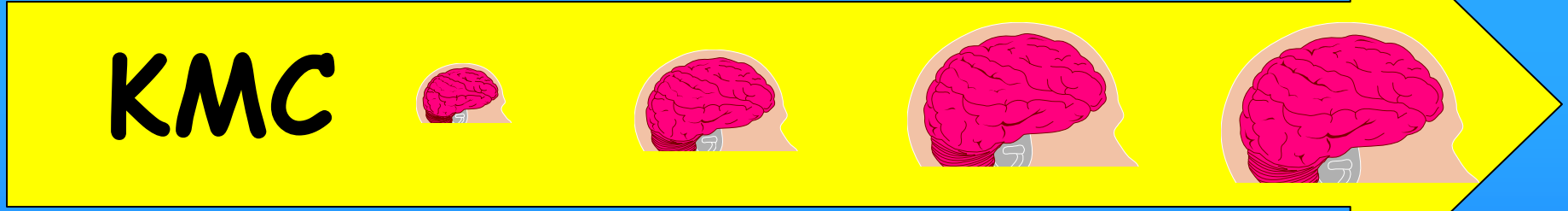
Breastfeeding

Support to the dyad

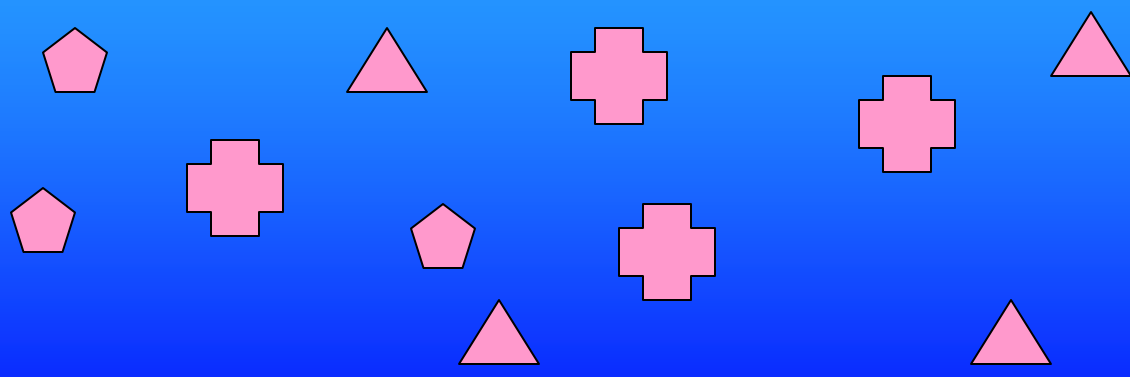
HEALTH
SYSTEMS



BIOMEDICAL



SOCIAL /
PATIENT

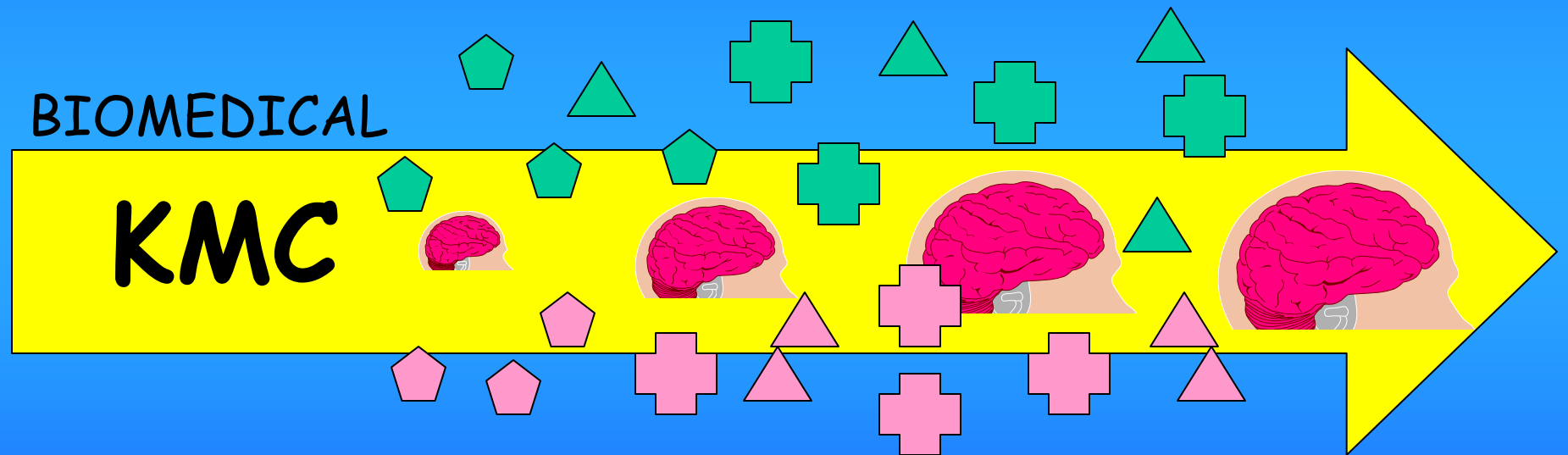


HEALTH
SYSTEMS

BIOMEDICAL

KMC

SOCIAL



UNIVERSAL TRUTH

HABITAT

determines

BEHAVIOUR

BEHAVIOUR

is about

RELATIONSHIPS

EXPANDING HABITAT THEORY

IN ALL MAMMALS : behaviour =

Ovum

CONCEPTION

Embryo

GESTATION

Fetus

PARTURITION

Newborn

TRANSITION

Neonate

INITIATION

Infant

MAINTENANCE

PLACE RELATIONSHIP

Fetus	Uterus	Mother
Newborn	Chest	Mother
Infant	Home	Father
Toddler	Home	Family
Child	Village	Community
Youth	Country	Nation
Adult	World	Humanity
Mature man	Cosmos	GOD

PLACE RELATIONSHIP

Adult	World	Humanity
Mature man	Cosmos	GOD
	Creation	Adam and Eve
	The Fall	The Serpent

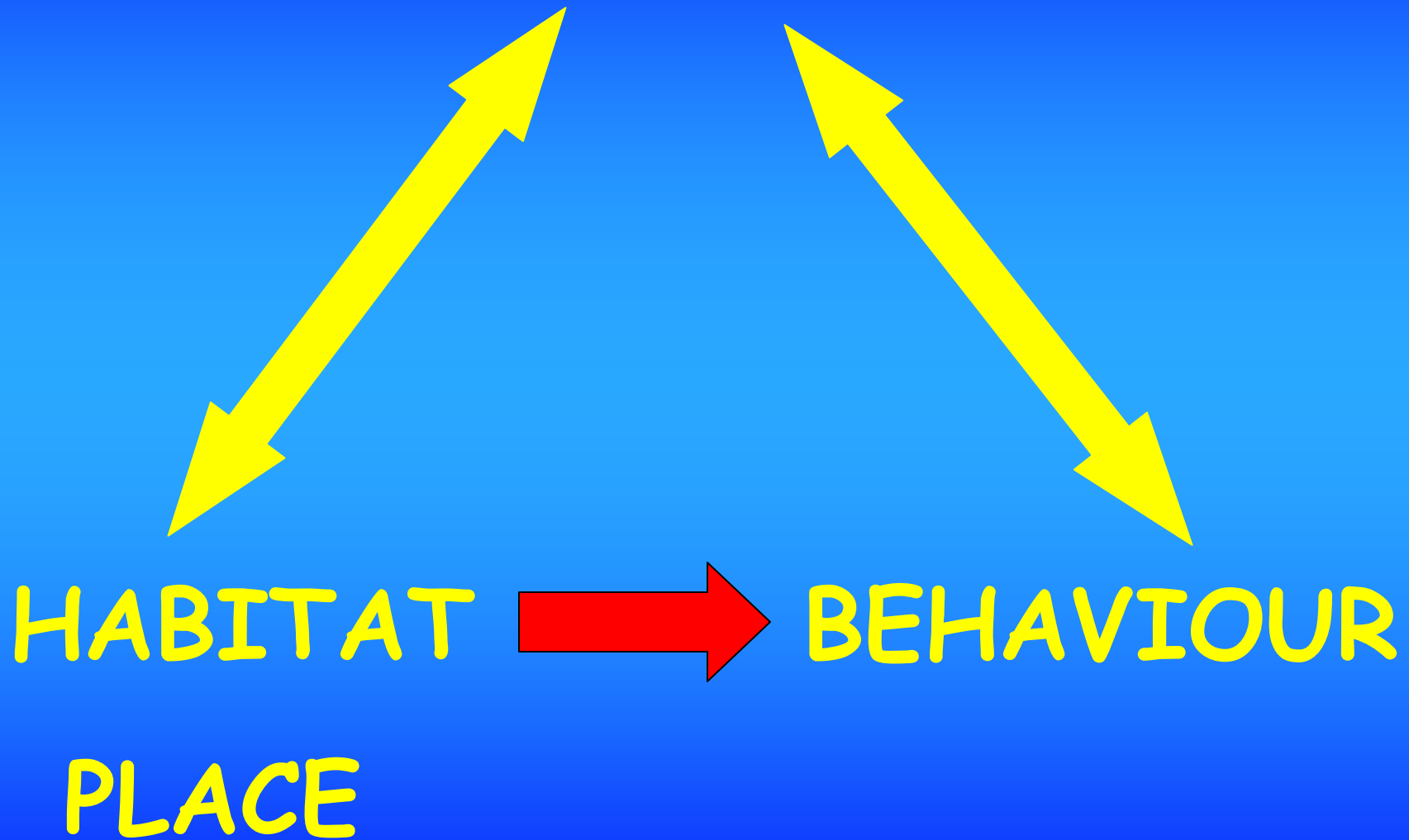
"Where are you, Adam?"

Repentance "turning round"

Sanctification Restoring relationship

Redemption **"I go to prepare a place"**

RELATIONSHIP



"Society reaps what it sows in the way that infants and children are treated. Efforts to reduce exposure to stress and abuse (specifically **MATERNAL INFANT SEPARATION** *Bergman*) in early life may have far-reaching impacts on medical and psychiatric health and may reduce aggression, suspicion and untoward stress in future generations."

Martin H Teicher



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