



Women's Health

Outcomes after Traumatic Brain Injury

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30% of girls/women
aged 0-25 sustained a TBI

(McKinlay et al 2008)

16,000 women a year
have a hospitalization or emergency
visit (in Canada)

(Colantonio et al 2009 – ABI Pilot Project)



228,000

Women Living with the Effects of TBI
(Estimated)

(Colantonio et al 2009 – ABI Pilot Project)

Therefore, there is a large group of women living with impairment and disability many years post injury

Do Women Fare Worse than Men?:

*A meta-analysis of gender differences
in traumatic brain injury outcome.*

Farace & Alves, 2000



J Neurosurg. 2000 Oct;93(4):539-45.

Worst Initial Injury Severity

e.g. death, duration post traumatic amnesia, length of hospitalization

More Somatic Symptoms

e.g. headaches, dizziness,
fatigue, sleep problems

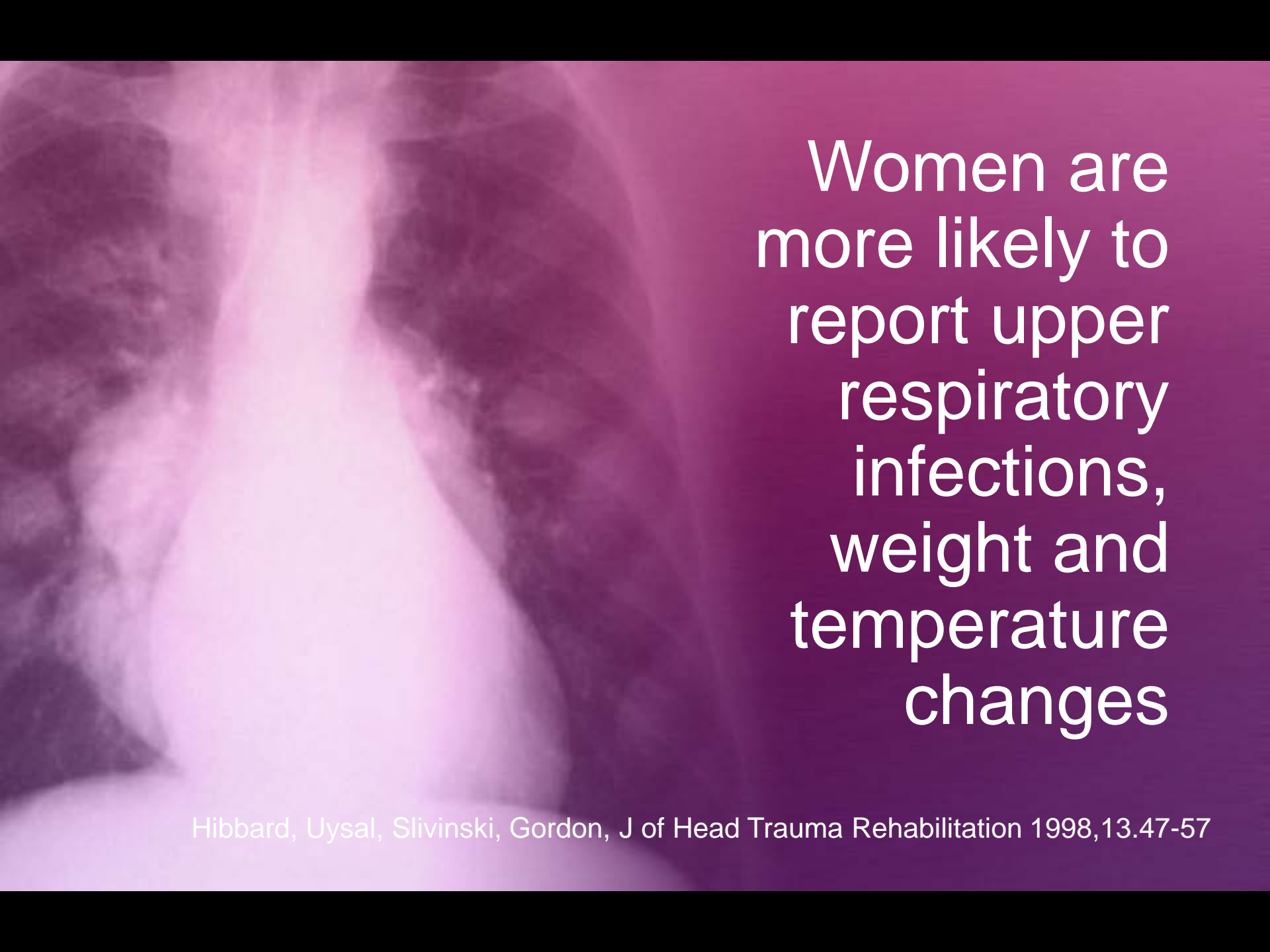
Report More Symptoms of Mood Disorders

e.g. anxiety, depression

Conclusion:

Women did worse in 85%
of the impairment and
disability outcomes
compare to men

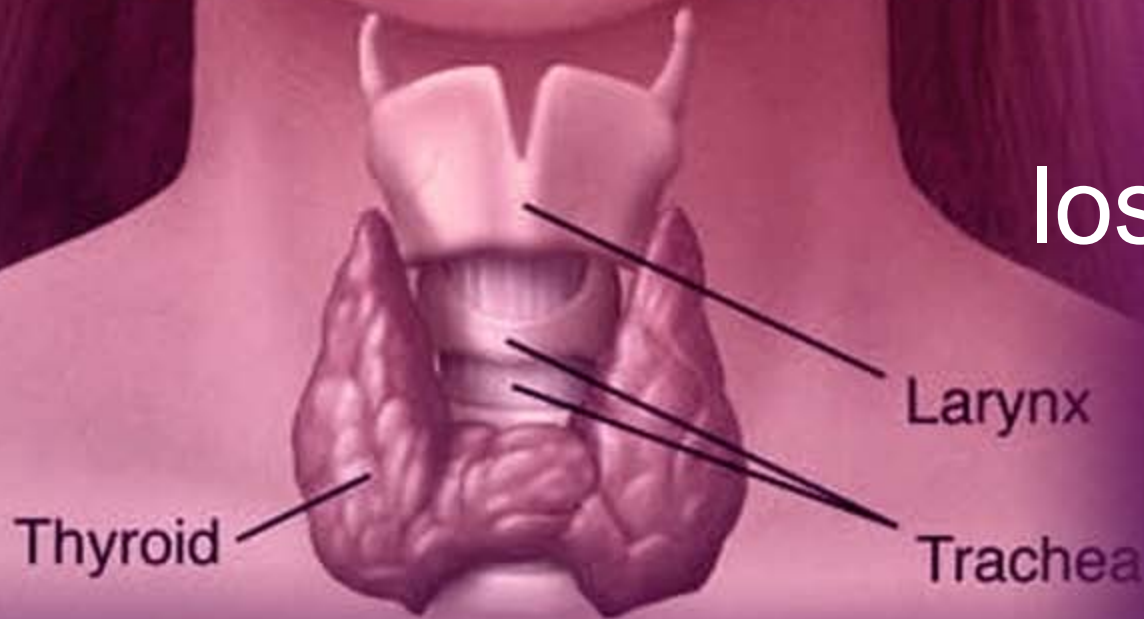
What other issues are unique
for women post injury?



Women are
more likely to
report upper
respiratory
infections,
weight and
temperature
changes

Hibbard, Uysal, Slivinski, Gordon, J of Head Trauma Rehabilitation 1998,13.47-57

More likely to
report thyroid
conditions,
sleep and
loss of urinary
control



Gender Differences

in long term
health outcomes

Colantonio et al., (2010) BMC Neurology



Results:

Women reported more headaches, dizziness, and increased loss of confidence compared to men

Results:

Women reported symptoms affected their ability to initiate daily activities and created a need for supervision/assistance

Women's Health Outcomes After Traumatic Brain Injury

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Study Focus

Reproductive health outcomes

Menstrual Cycles

Fertility

Cervical Cancer

Screening

Other health measures

Mental Health

Energy/Fatigue

Overall self-rated health

**Information was collected
using face to face
interviews and medical
charts**

Participants

Women with TBI

(GCS score <13)

Aged 18 to 40

(at time of injury)

5-10 Years post Injury

Community Living

(8 Sites Across Ontario)

Comparison group (Controls)

Women with no history of TBI

Matched with TBI participants
on age, education, and postal
code

Outcomes

Menstrual Cycles

Regularity of periods, amenorrhea

Conception and Pregnancy

Ability to conceive, live births, complications

Cervical Cancer Screening

Asked history of pap over 5 years

Sample of the study

N:104

(104 matched controls)

Mean age: 35 years

Mechanism of injury: 76% MVC

Currently working: 59%

Functional limitations: 10% ADL and 50% IADL

Results:

Menstrual Cycles

68%

reported that their cycles
became irregular after injury

OR 6.41 (2.7, 18.8) p <0.001

46%

experienced amenorrhea from
2 to 60 months after injury

OR 20.5 (6.3. 125.8) $p < 0.001$

Conception & Pregnancy

No significant difference
in ability to conceive
between women with TBI
and women without

Conception & Pregnancy

Women with TBI reported significantly more post-partum difficulties

OR 3.25 (1.07- 10.40) $p < 0.05$

Conception & Pregnancy

Women with TBI reported significantly fewer live births

OR 0.15 (0.03-0.67) $p < 0.005$

Cervical Cancer Screening

Our study (Colantonio et al 2010) found no differences in numbers of women who had a pap smear in last 3 years.

Conclusion:

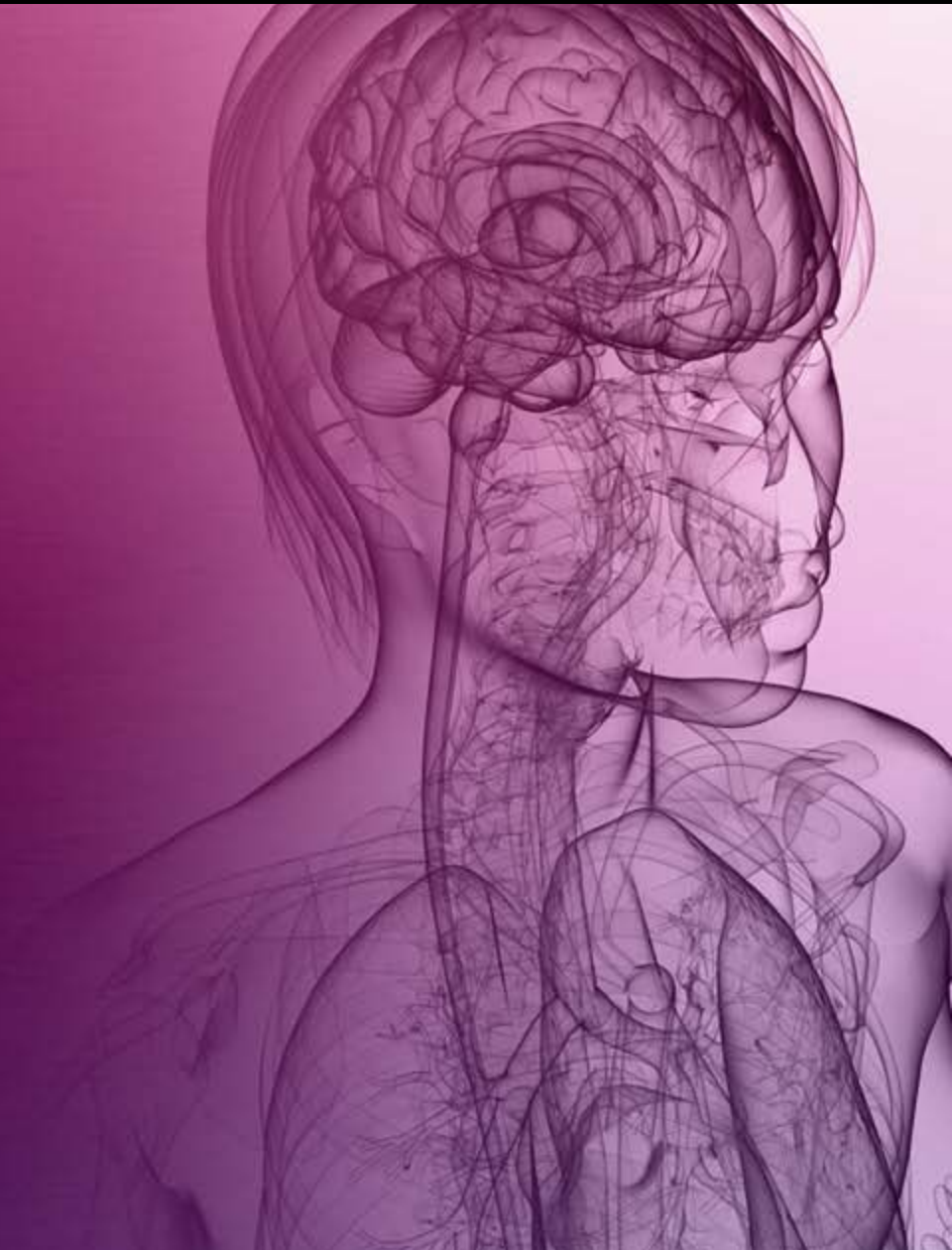
TBI can create significant menstrual and post partum issues



What needs to be done?

Education about
prognosis

On-going screening
and refer as
necessary



Important issues to discuss with women: Neuroendocrine Disorders

(e.g. amenorrhea may be a sign
of underlying endocrine
disorders)



Hypopituitarism 29%-59%

(Agha A et al. 2004; Leal-Cerro A et al, 2005; Bondanelli M et al, 2005)

Pituitary Disorders are under
diagnosed and can effect sex
hormones

Preparation for
conception and
pregnancy needs
to be discussed

Study Results for Mental Health

Women with TBI had significantly lower scores on emotional well-being and energy/fatigue compared to women without TBI

$p=.0004$ and $p<.0001$, respectively

Colantonio et al 2010, Journal of Women's Health



Mental Health

Several studies indicate more women reported symptoms of depression and anxiety compared to men

Take Home Message:

**Routinely screen
and assess mental
health**

**Provide on-going
services**



Take Home Message

Women have unique impairment
and disability after a traumatic brain
injury



International workshop on women and TBI

Montreal 2010

**Key areas identified by
Consumers**

Clinicians

Caregivers

Advocates

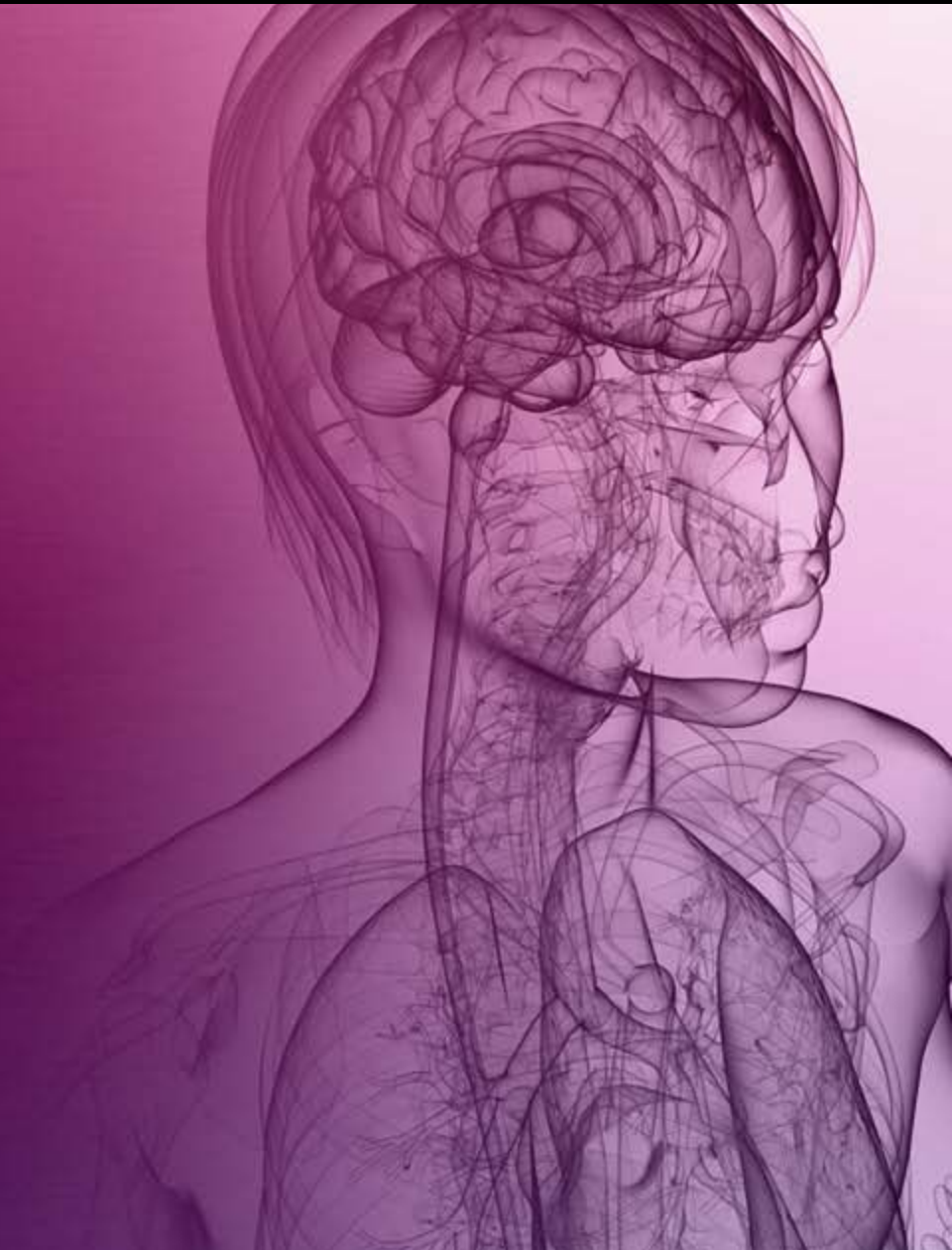
Researchers/funders

Harris et al., Brain Injury, in press

Violence and
Abuse Issues

Aging

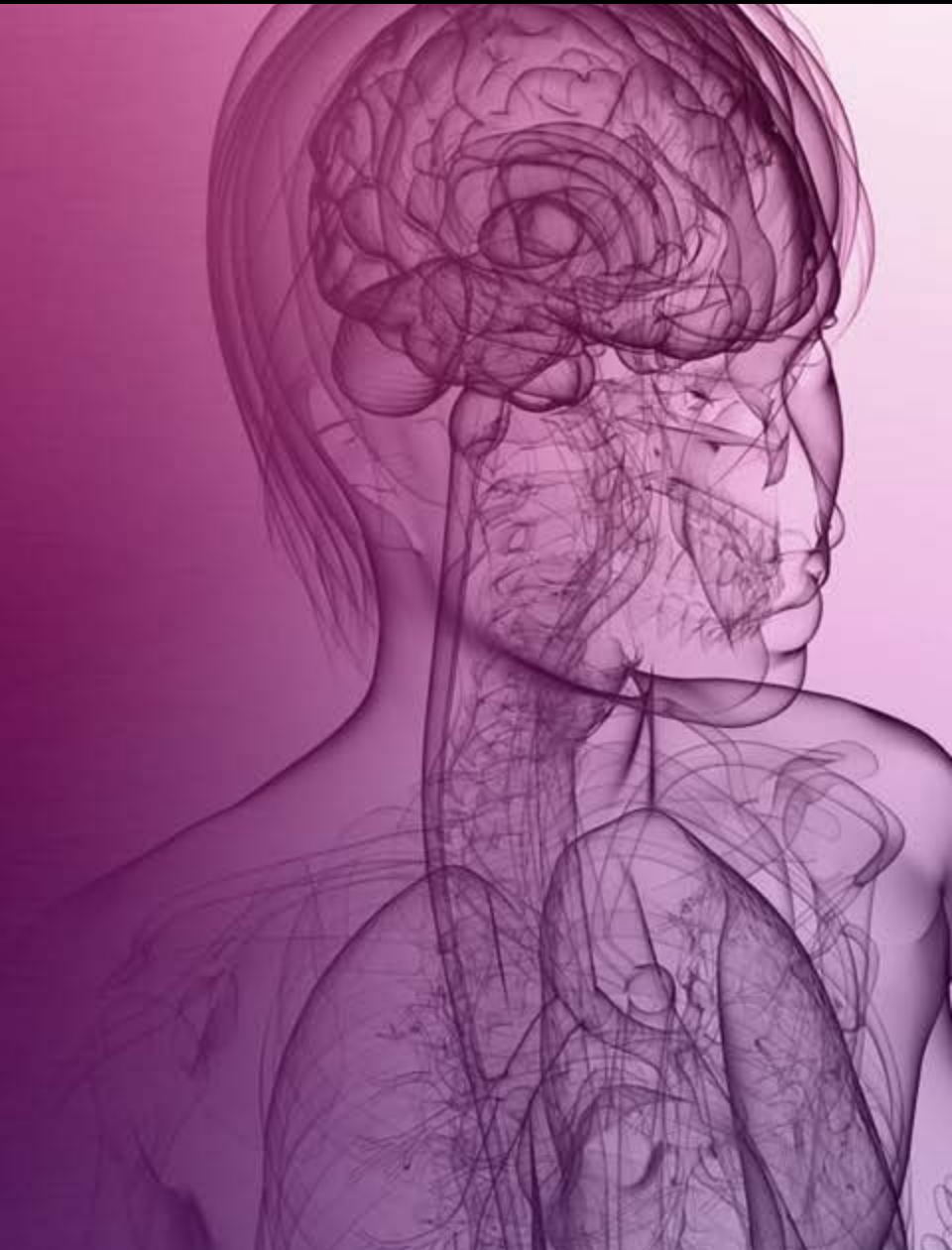
Psychological
and Emotional
Health



Girls and
Adolescents

Community
Integration

Reproductive and
Sexual Health



Resources

American Congress of Rehabilitation
Medicine International Task Force on
Women

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Disabled Women's Network -
DAWN Canada
<http://www.dawncanada.net>

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