

Fetal Alcohol Syndrome Spectrum Disorder (FASD) Exposure Model

Location:	Maine	Year:	2017
Total Population in Location:	1300000		
Annual Births:	12700	Percent of Births Exposed:	40.0 %
FAS Prevalence (per 1000 births):	2.0	ARND Prevalence (per 1000 births):	8.0

Distribution of Mothers by Exposure Category:	Low: 75.0 %	Moderate: 20.0 %	High: 5.0 %
Distribution of Adverse Outcomes by Exposure Category:	Low: 5.0 %	Moderate: 15.0 %	High: 80.0 %

Cost of Alcohol Treatment for 1 Woman:	5000.00
Cost of Lifetime Care per Case:	2900000.00
Cost Savings of preventing one case of FASD:	2342.00

Results

LOW EXPOSURE:

	N (Cases)	FASD Proportion	% Unaffected	Number Needed to Treat to Prevent One Case of FASD	
				NNT 25%	NNT 80%
FAS	1	1/3000	99.97	11999	3749
ARND	5	1/750	99.87	2999	937
Total FASD	6	1/600	99.83	2399	749

MODERATE EXPOSURE:

	N (Cases)	FASD Proportion	% Unaffected	NNT 25%	NNT 80%
				FAS	4
ARND	15	1/67	98.5	266	83
Total FASD	19	1/53	98.13	213	66

HIGH EXPOSURE:

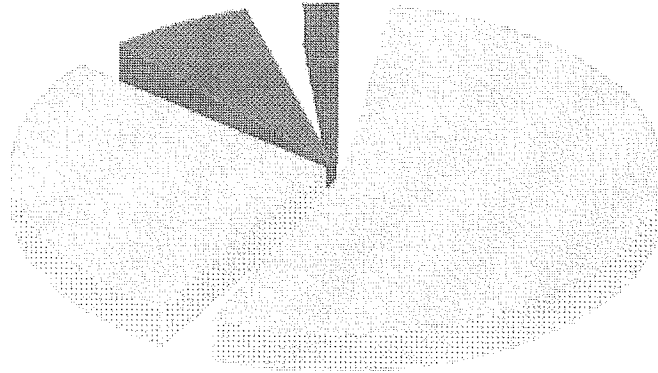
	N (Cases)	FASD Proportion	% Unaffected	NNT 25%	NNT 80%
				FAS	20
ARND	81	1/3	68	12	3
Total FASD	102	1/2	60	9	3

Questions? Send them to larry.burd@med.und.edu (mailto:larry.burd@med.und.edu).

Cost of FASD Prevention for Maine in 2017

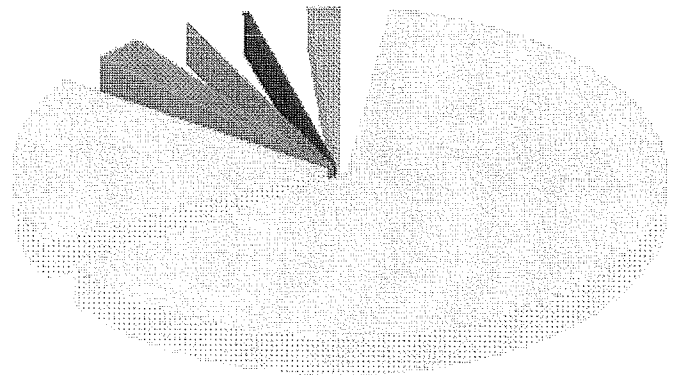
Alcohol Exposure for a Cohort of 12700 Pregnant Women in Maine in 2017

No	7620
Low	3810
Moderate	1016
High	254



Numbers of Cases and proportion (%) of Any FASD in 5080 Women from Maine in 2017

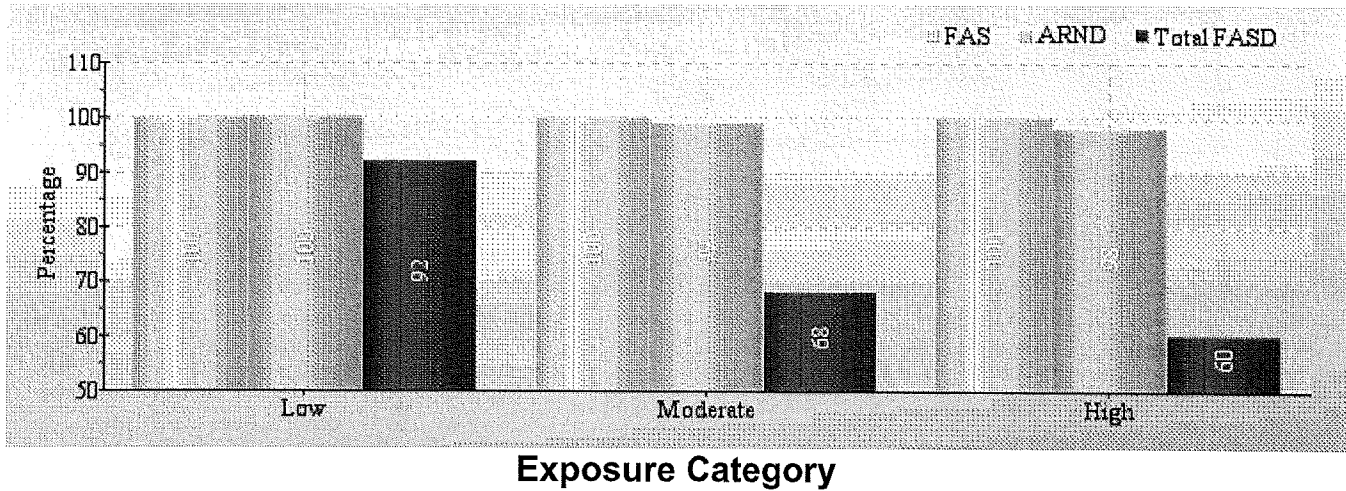
Low Exposure No FAS/Partial	3804
Moderate Exposure No FAS/Partial	997
High Exposure No FAS/Partial	152
Low Exposure FAS/Partial	6
Moderate Exposure FAS/Partial	19
High Exposure FAS/Partial	102



Proportion of FASD

	Exposure Category		
	<i>Low</i>	<i>Moderate</i>	<i>High</i>
FAS	1/ 3000	1/ 267	1/ 12
ARND	1/ 750	1/ 67	1/ 3
Total FASD	1/ 600	1/ 53	1/ 2

Proportion of Exposed Births not Affected



Number Needed to Treat (NNT) to Prevent One Case of FASD with an Intervention of 25% or 80% Effectiveness

Treatment Effectiveness	Exposure Category					
	Low		Moderate		High	
	25%	80%	25%	80%	25%	80%
FAS	11999	3749	1066	333	49	15
ARND	2999	937	266	83	12	3
Total FASD	2399	749	213	66	9	3

Cost to Prevent One Adverse Outcome

Treatment Effectiveness	Exposure Category					
	Low		Moderate		High	
	25%	80%	25%	80%	25%	80%
FAS	\$59,995,000	\$18,745,000	\$5,330,000	\$1,665,000	\$245,000	\$75,000
ARND	\$14,995,000	\$4,685,000	\$1,330,000	\$415,000	\$60,000	\$15,000
Total FASD	\$11,995,000	\$3,745,000	\$1,065,000	\$330,000	\$45,000	\$15,000

Cost of FASD Prevention for Maine in 2017

Prevention Model Parameters

In Maine, the annual birth cohort in 2017 was 12,700. In this population 40% of births had prenatal alcohol exposure. In the exposed births 75% were in the low exposure group, 20% were in the group with moderate exposure and 5% were in the high exposure group.

The FASD cases were distributed across the three exposure groups with 5% of the FASD cases in the low exposure group, 15% of FASD cases occurred in the moderate exposure group, and 80% of FASD cases occurred in the high exposure group.

In this model the prevalence proportion (per 1,000 births) used for FAS was 2.0 births and 8.0 for ARND cases.

The cost of substance abuse treatment was 5,000 for each woman.

How many cases of FASD occurred in Maine in 2017?

In this population there were 25 cases of FAS (includes partial FAS), and 102 cases of ARND. The total number of FASD cases in Maine in 2017 was 127.

Maine has 127 women who need treatment to prevent recurrence of FASD.

How many cases of FASD were in each exposure group?

Low Exposure: 1 cases of FAS and 5 cases of ARND (total of 6 cases of FASD).

Moderate Exposure: 4 cases of FAS and 15 cases of ARND (total of 19 cases of FASD).

High Exposure: 20 cases of FAS and 81 cases of ARND (total of 102 cases of FASD).

How many births were affected (What is the proportion of births affected with FASD?) This is the number of FASD cases (numerator) over the number of unaffected births (denominator).

Low Exposure Group: The proportion of cases of FAS and ARND cases and the total cases of FASD were: one case of FAS in every 3000 exposed births; one case of ARND for every 750 exposed births. All FASD: one case of FASD in every 600 exposed births.

Moderate Exposure Group: The proportion of cases of FAS and ARND cases and the combined cases of FASD were: one case of FAS in every 267 exposed births; one case of ARND for every 67 exposed births. All FASD: one case of FASD in every 53 exposed births.

High Exposure Group: The proportion of cases of FAS and ARND cases and the combined cases of FASD were: one case of FAS in every 12 exposed births; one case of ARND for every 3 exposed births. All FASD: one case of FASD in every 2 exposed births.

How many exposed births were not affected by FASD?

Low Exposure Group In the group with low exposure 99.97% of births did not have FAS, 99.87% of births did not have ARND and 99.83% of births did not have any FASD.

Moderate Exposure Group In the group with low exposure 99.63% of births did not have FAS, 98.50% of births did not have ARND and 98.13% of births did not have any FASD.

High Exposure Group In the group with low exposure 92.00% of births did not have FAS, 68.00% of births did not have ARND and 60.00% of births did not have any FASD.

If the treatment for Substance Abuse was 25% effective (one woman of every four treated would not

drink during pregnancy), how many women would need to be treated (number needed to treat-NNT) to prevent one case of FAS, ARND or any FASD?

Low Exposure Group In this group the NNT (number needed to treat) to prevent one case of FAS would be 11999, to prevent one case of ARND the NNT would be 2999, and the NNT to prevent any case of FASD would be 2399.

Moderate Exposure Group In this group the NNT (number needed to treat) to prevent one case of FAS would be 1066, to prevent one case of ARND the NNT would be 266, and the NNT to prevent any case of FASD would be 213.

High Exposure Group In this group the NNT (number needed to treat) to prevent one case of FAS would be 49, to prevent one case of ARND the NNT would be 12, and the NNT to prevent any case of FASD would be 9.

If substance abuse treatment was 25% effective (one of four women treated would not drink during a subsequent pregnancy) what does it cost to prevent one case of FAS, ARND or any FASD?

Low Exposure Group: To prevent one case of FAS the NNT would be 11999 and the cost to prevent one case of FAS in this group would be \$ 59,995,000. To prevent one case of ARND the NNT would be 2999 and the cost to prevent one case of ARND would be would be \$ 14,995,000. To prevent one case of any FASD the NNT would be 2399 for a cost of \$ 11,995,000.

Moderate Exposure Group: To prevent one case of FAS the NNT would be 1066 and the cost to prevent one case of FAS in this group would be \$ 5,330,000. To prevent one case of ARND the NNT would be 266 and the cost to prevent one case of ARND would be would be \$ 1,330,000. To prevent one case of any FASD the NNT would be 213 for a cost of \$ 1,065,000.

High Exposure Group: To prevent one case of FAS the NNT would be 49 and the cost to prevent one case of FAS in this group would be \$ 245,000. To prevent one case of ARND the NNT would be 12 and the cost to prevent one case of ARND would be would be \$ 60,000. To prevent one case of any FASD the NNT would be 9 for a cost of \$ 45,000.

If the treatment for Substance Abuse was 80% effective (eight woman out of ten treated would not drink during pregnancy), how many women would need to be treated (number needed to treat-NNT) to prevent one case of FAS, ARND or any FASD?

Low Exposure Group: In this group the NNT (number needed to treat) to prevent one case of FAS would be 3749, to prevent one case of ARND the NNT would be 937, and the NNT to prevent any case of FASD would be 749.

Moderate Exposure Group: In this group the NNT (number needed to treat) to prevent one case of FAS would be 333, to prevent one case of ARND the NNT would be 83, and the NNT to prevent any case of FASD would be 66.

High Exposure Group: In this group the NNT (number needed to treat) to prevent one case of FAS would be 15, to prevent one case of ARND the NNT would be 3, and the NNT to prevent any case of FASD would be 3.

If substance abuse treatment was 80% effective (eight women out of ten treated would not drink during a subsequent pregnancy) what does it cost to prevent one case of FAS, ARND or any FASD?

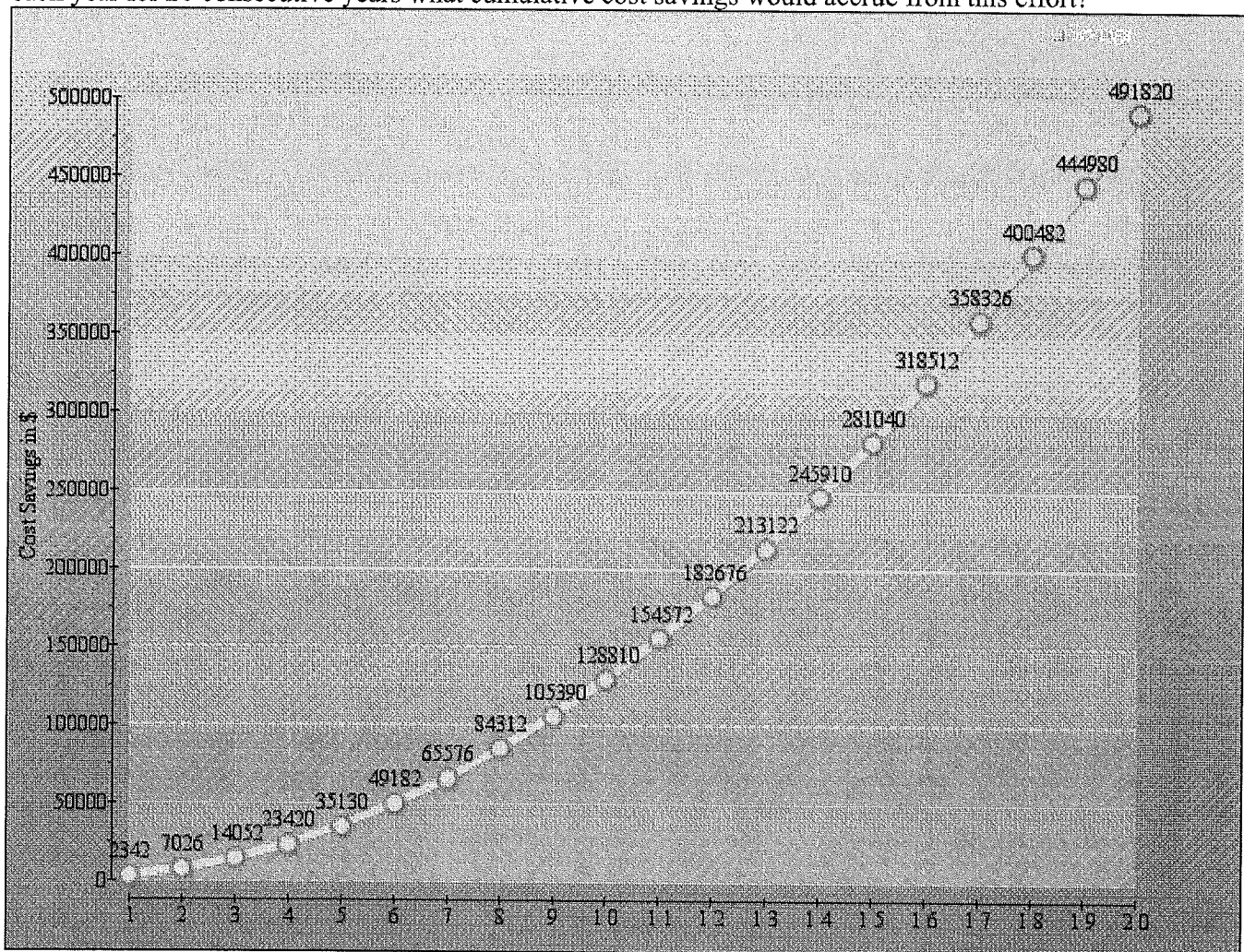
Low Exposure Group: To prevent one case of FAS the NNT would be 3749 and the cost to prevent one case of FAS in this group would be \$ 18,745,000. To prevent one case of ARND the NNT would be 937 and the cost to prevent one case of ARND would be \$ 4,685,000. To prevent one case of any FASD the NNT would be 749 for a cost of \$ 3,745,000.

Moderate Exposure Group: To prevent one case of FAS the NNT would be 333 and the cost to prevent one case of FAS in this group would be \$ 1,665,000. To prevent one case of ARND the NNT would be 83 and the cost to prevent one case of ARND would be \$ 415,000. To prevent one case of any FASD the NNT would be 66 for a cost of \$ 330,000.

High Exposure Group: To prevent one case of FAS the NNT would be 15 and the cost to prevent one case of FAS in this group would be \$ 75,000. To prevent one case of ARND the NNT would be 3 and the cost to prevent one case of ARND would be \$ 15,000. To prevent one case of any FASD the NNT would be 3 for a cost of \$ 15,000.

Prevention of FASD in a clinical practice setting

If a clinical entity (prenatal care providers, hospital or obstetrical practice) could prevent one case of FASD each year for 20 consecutive years what cumulative cost savings would accrue from this effort?



Cumulative health care cost savings from prevention of one case of FASD each year for 20 consecutive years

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