Smoking Cessation During Pregnancy: A Clinical Proposal For Assessment and Intervention Strategies

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Objective

- Explore the current research and literature on smoking cessation during pregnancy
- Address the role of health care providers in assisting pregnant patients to quit smoking
- Provide tools that clinicians can utilize in the cessation process
- Discuss options for smoking cessation, including critical time frames in which to quit smoking and nicotine replacement therapy
- Propose a step-by-step approach demonstrating how clinicians should handle smoking cessation discussions, ensuring that every patient is given the best opportunity to quit smoking and move toward a healthy pregnancy for the mother and child

Materials & Methods

- PUBMed: "smoking" and "pregnant women"; "smoking cessation" and "pregnant women"
- AAPA weekly newsletter
- Center for Disease Control
- References recommended by colleagues

Fetal Risks

- Low Birth Weight (LBW): <2,500 grams
- Small for Gestational Age (SGA): < 10th percentile for gestational age
- Immature Lung and Cardiovascular Development
- Sudden Infant Death Syndrome
- Cleft lip and cleft palate
- Cognitive delay
- Respiratory and ear infections
- Asthma
- Future pancreatic cancer
- Becoming a smoker

Adverse Events

- Placenta previa
- Placental abruption
- Preterm birth
- Bleeding during pregnancy
- Spontaneous Abortion

Maternal Risks

- Cardiovascular Disease
- Cancer
- Bronchitis
- Emphysema
- Reduced Fertility
- Pelvic Inflammatory Disease
- Ectopic Pregnancy

Cost

- $135 – $167 million spent each year in NICU costs due to placenta previa, placental abruption, and preterm labor in pregnant smokers
- Greater than 90% of infant costs are due to LBW
- $1 in smoking cessation costs saves $6 in NICU costs
- Decreasing the number of pregnant smokers by 1% will prevent 1,300 LBW babies and save $21 million/ year.

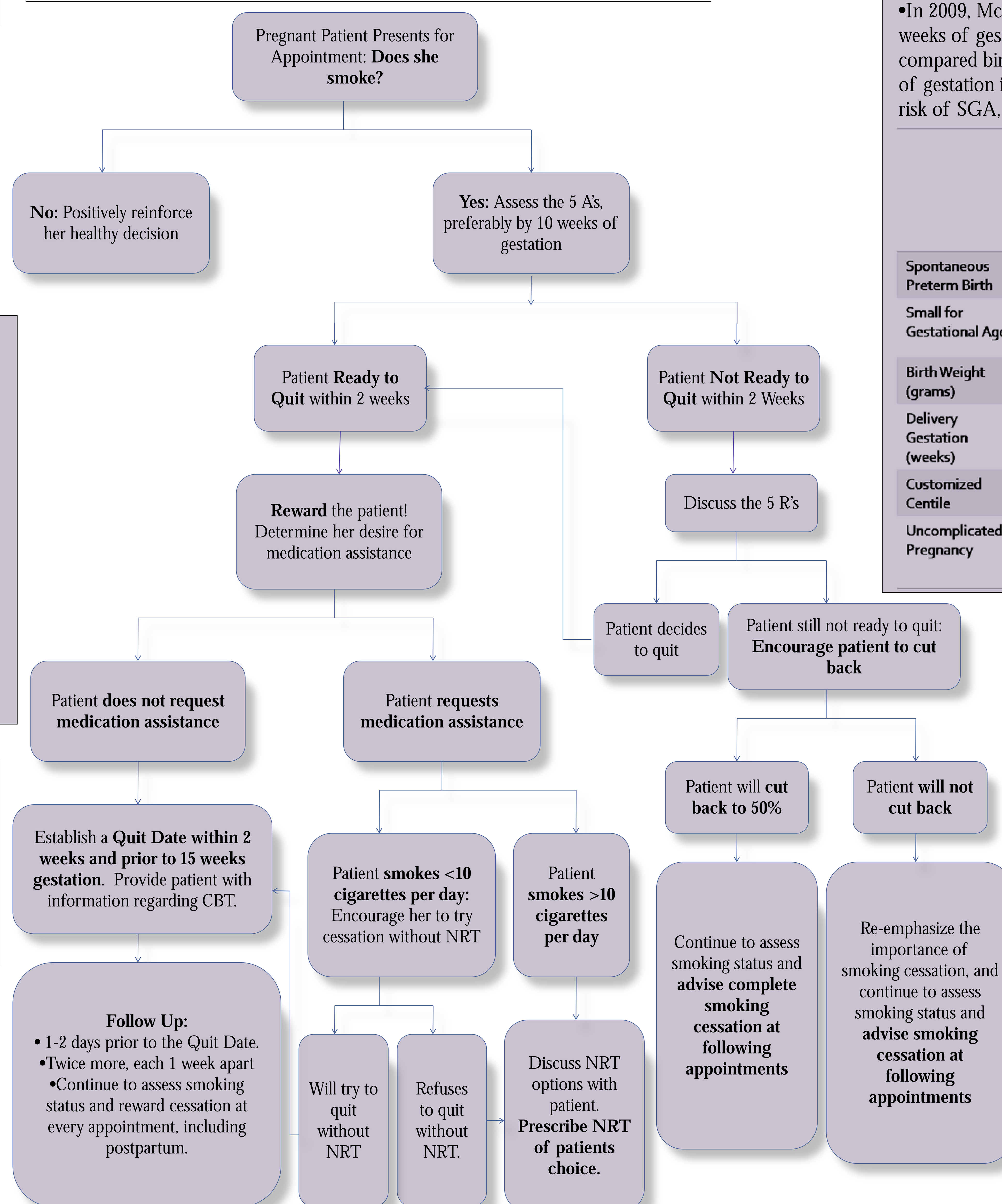
The Need for Change

- In 2003, Albrecht et al. reported that only 56% of OB/Gyn's always discuss smoking cessation strategies, and only 35% provide patients with self-help materials
- In 2001, Walsh et al. reported that nurses offered more smoking cessation counseling than Obstetricians and General Practitioners
- Lumley et al., 2009, call pregnancy is a "teachable moment"
- Ashwin & Watts, 2008, stated women attribute cessation success largely to the support of their medical provider

The Role of the Health Care Provider

- Knowledge of the characteristics of pregnant smokers facilitates additional counseling and appropriate referrals
  - 13% of U.S. pregnant women smoke. Of these, 38% smoke > 1 pack/day
  - Native American, military personnel, and blue-collar workers smoke more cigarettes per day
  - Less education
  - Less likely to be employed
  - More likely to be single
  - BMI Extremes
  - Higher rates of alcohol consumption
  - Lower rates of Folic Acid supplementation
- The 5 A's
  1. Ask: Use open ended questions to assess smoking status at every visit
  2. Advise: Use clear, concise language when advising patients to cease smoking
  3. Assess: The 5 R's (Relevance, Risks, Rewards, Roadblocks, Repetition) personalize the discussion.
  4. Assist: Set a quit date within 2 weeks. Also, provide the patient with self-help material and encourage familial support.
  5. Arrange: Follow up with the patient1-2 days before her quit date. Follow up twice after her quit date, each phone call about 1 week apart. Also, follow up with the patient postpartum.

Proposal for Clinical Assessment and Intervention Strategies



	CBT + NRT	CBT Only	P-Value
% Adverse Outcomes	30%	17%	0.07

	Major Malformations	Relative Prevalence Risk Ratio (95% CI)
Non-Smokers (n=55,915)	2,168 (0.039%)	1.0
< 10 Cigarettes/Day (n=12,365)	535 (0.043%)	1.12 (1.02-1.23)
>10 Cigarettes/Day (n=4,447)	187 (0.042%)	1.09 (0.93-1.27)
NRT Use (n=250)	11 (0.044%)	1.13 (0.62-2.07)

	7 Weeks Gestation	38 Weeks Gestation	3 Months Postpartum
Cessation rates with CBT Only (n=59)	3 (8%)	2 (7%)	14%
Cessation rates with NRT + CBT (n=122)	18 (24%)	14 (18%)	20%
Adjusted P-Value	0.02	0.04	0.55

	CBT + NRT	CBT Only	P-Value
MBW	3061 grams (SD=661)	3132 grams (SD=688)	0.51
MGA	37.9 weeks (SD=3.1)	38.6 weeks (SD=2.7)	0.14

Nicotine Replacement Therapy

- Risks
  - Fetal hypoxia
  - May need higher dose
  - Higher risk of adverse outcomes
  - Do not increase cessation rates postpartum
- Benefits
  - Reduces maternal and fetal toxin exposure
  - No difference in Mean Birth Weight (MBW) or Mean Gestational Age (MGA)
  - Increase cessation rates during pregnancy

Critical Time Frames

- In 2009, McCowan et al. separated women into 3 groups based on their smoking status at 15 weeks of gestation: non-smokers, stopped- smokers, and continued-smokers. The results compared birth outcomes of the three groups. Data provided empirical evidence that 15 weeks of gestation is the longest duration a woman can smoke during pregnancy without increasing her risk of SGA, LBW, and preterm birth greater than a non-smoker.

	Non-Smoker n=1,992	Stopped Smoker n=261	Mean Difference (Stopped to Non-Smoker) CI= 95%	P-Value (Stopped to Non-Smoker)	Current Smoker n=251	Mean Difference (Stopped to Current Smoker) CI= 95%	P-Value (Stopped to Current Smoker)
Spontaneous Preterm Birth	88 (4%)	10 (4%)	-0.6% (-2.6 to 2.6)	0.66	25 (10%)	6.1% (1.7-10.8)	0.006
Small for Gestational Age	195 (10%)	27 (10%)	-0.5% (-5.0 to 2.9)	0.80	42 (17%)	6.4% (1.4-12.4%)	0.03
Birth Weight (grams)	3409 (SD=592)	3479 (SD=560)	-70 (-146 to 6)	0.09	3139 (SD=751)	270 (190 to 350)	<0.001
Delivery Gestation (weeks)	39.5 (SD=2.3)	39.7 (SD=2.4)	-0.2 (-0.5 to 0.1)	.11	38.6 (SD=3.6)	0.9 (0.6-1.2)	<0.001
Customized Centile	48.9 (28.7)	49.3 (28.5)	-0.4 (-4.1 to 3.3)	0.88	41.3 (29.7)	7.6 (3.8-11.4)	0.002
Uncomplicated Pregnancy	1192 (60%)	162 (62%)	-2.2% (-8.3 to 4.2)	0.49	111 (44%)	-17.8% (-26.1 to -9.2)	<0.001

Conclusion

- Health care providers have the opportunity and responsibility to initiate the smoking cessation discussion.
- Following the guidelines outlined in this thesis will facilitate clinician efforts in appropriately aiding pregnant smokers to embrace the role of motherhood in a smoke-free environment.
- Research regarding smoking cessation during pregnancy is ongoing, and providers should continue to review and interpret literature as it is published.

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