

# How comfortable are you doing pump fitting and assessment?

Tips to promote pumping safety  
and maximize milk removal

*Presenter- Alisa Williams RN MSN IBCLC*  
*Owner-Momentum Lactation*  
*Member-Academy of Breastfeeding Medicine*

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Hi, I'm Alisa,  
owner of  
Momentum  
Lactation  
Breastfeeding  
Support



- I'm a nurse, lactation consultant, educator, and mom of two.
- I'm a fierce breastfeeding advocate.
- I love to help moms find, keep or regain their breastfeeding momentum and reach their goals using evidence based information.

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# Welcome, breastfeeding supporters!

*Lets talk about some important information to  
help you get confident working with  
breastfeeding persons and pumps!*

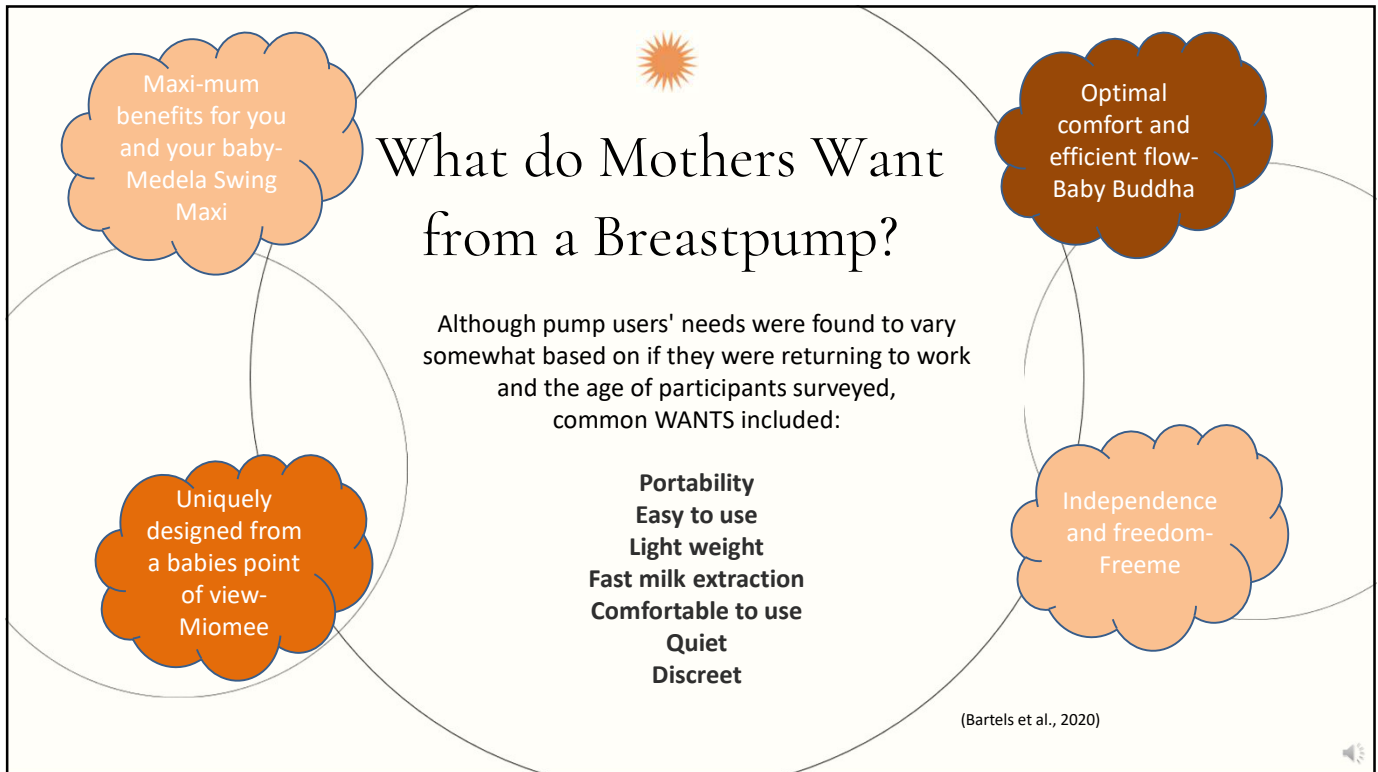
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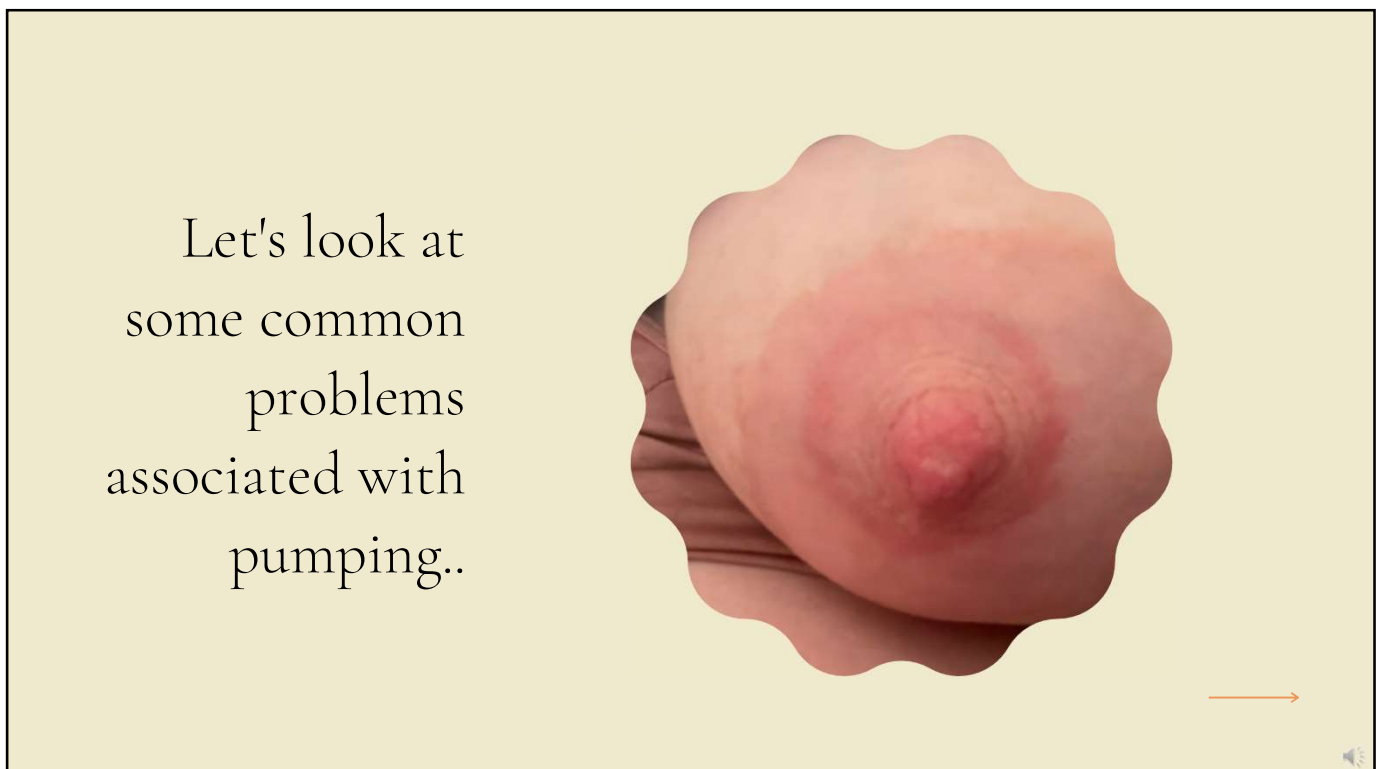
## Objectives

- Identify common problems  
associated with pumping
- Explore types and features of  
breast pumps
- Define the components of a  
clinical pumping assessment
- Review resources for patient  
and provider education

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## Pain

Pumping may not be the solution when moms are experiencing latch pain.

Pumping or latching pain is not sustainable and lactation person are at **HIGH RISK** for lactation **FAILURE**.



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## Trauma

Wounds-tissue loss-infection-pain



**Non healing wound**

**Edema**

**Blocked Inflamed Montgomery Glands**



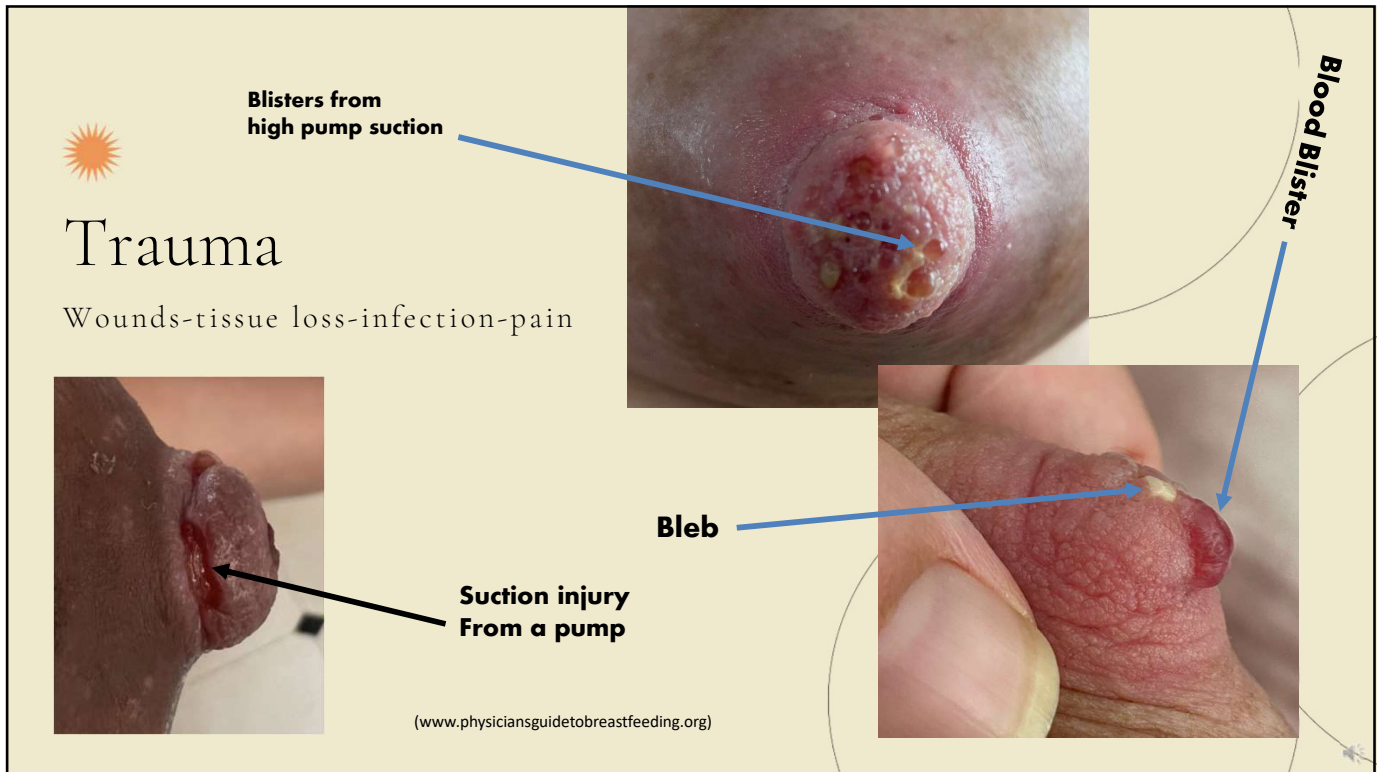
**Blood blisters from high pressure**



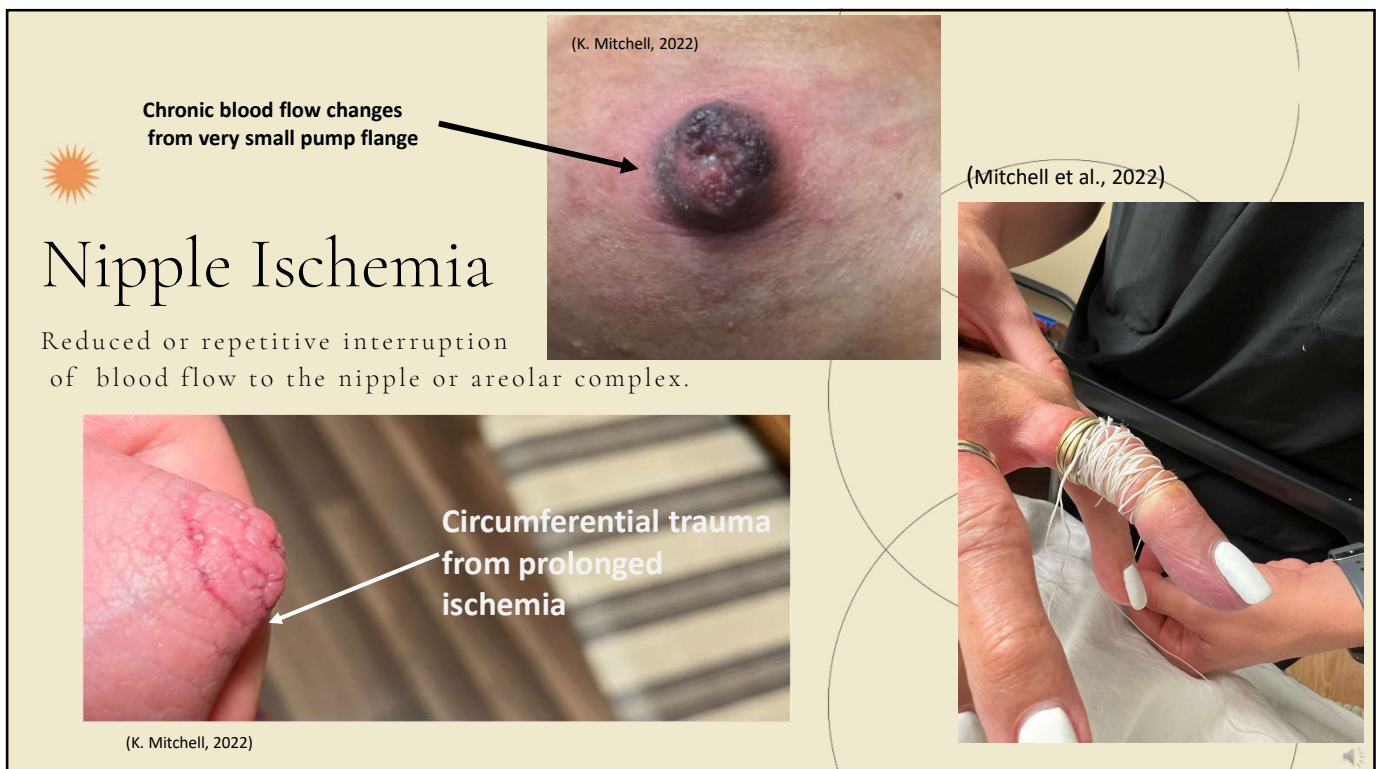
(www.physiciansguidetobreastfeeding.org)

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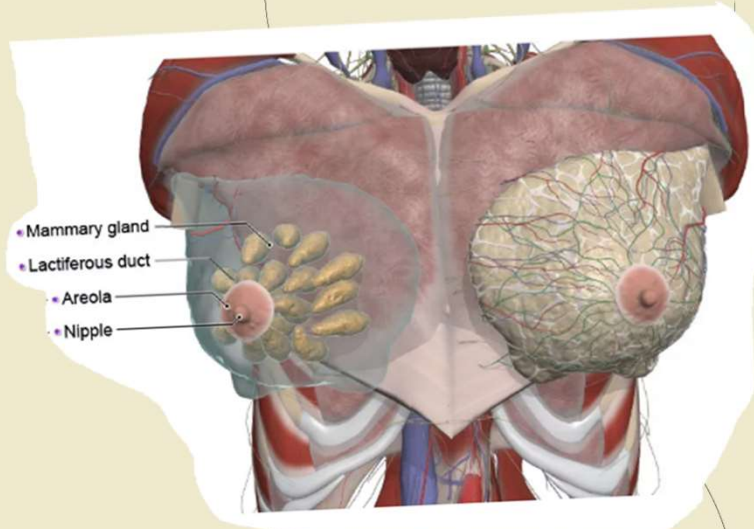


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## Loss of Sensation

Can be caused by damage or can be a result of nipple care regimens.



<https://www.primalpictures.com/blogs/breastfeeding-anatomy-physiology/>

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## Difficult Let Down

Double Duty-Extra or Prolonged Feedings/Pump Sessions.



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## Ineffective Emptying

Unequal supply-Diminishing Supply-  
Extra Pumping-Discomfort-Massagers



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## Mastitis Spectrum

Infection-Dysbiosis

*Infectious mastitis generally takes 24 hours or more to develop, and is most often associated with massage, over pumping or overfeeding from the breast. (K. Mitchell, 2022)*



<https://physicianguidetobreastfeeding.org/maternal-concerns/mastitis-and-associated-complications/#mastitis>

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## Early Weaning

Loss of supply-exhaustion-reprioritizing



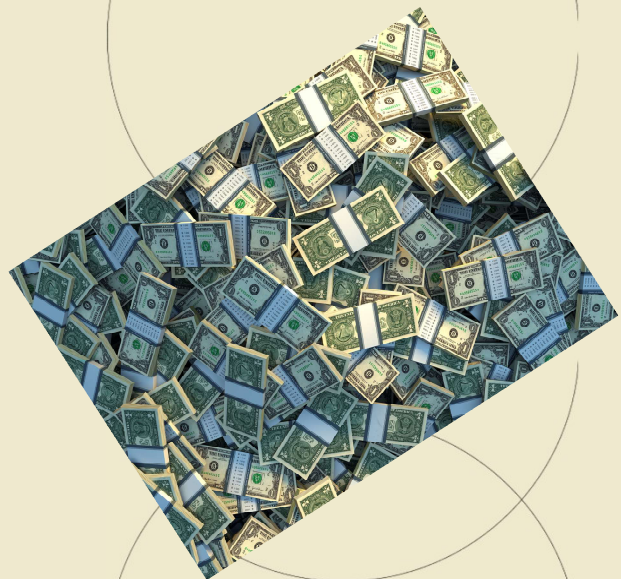
*Eping = Exclusive Pumping*

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## Financial Loss

Additional equipment and supplies-  
supplements/products- medical expenses-  
time off work



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## Mental Health Concerns

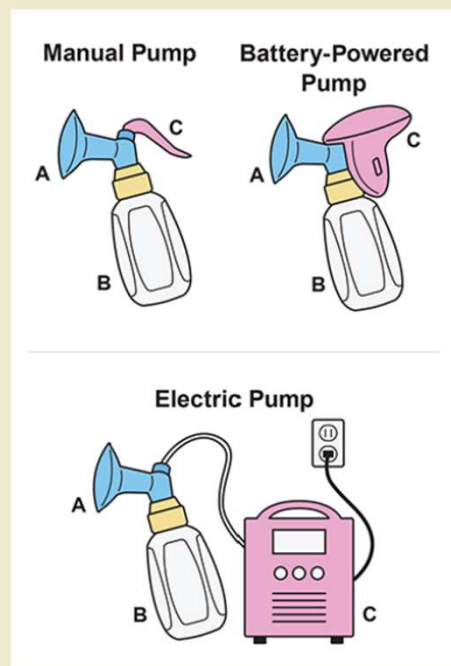
Stress-fatigue-lack of sleep-post partum anxiety or depression



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## Breast pumps 101

..filling in some knowledge gaps



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How  
comfortable are  
you talking  
about breast  
pumps..



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- FDA does not define system
  - Open vs. closed
- Does not regulate safety of use beyond mechanical function
- Covered by most insurances since 2011
- Used by over 80% of moms who choose to breast/breastmilk feed
- Emerging evidence on use, safety, effectiveness
- No current recommendations/best practices for use from the ABM



Breast pump  
Oversight



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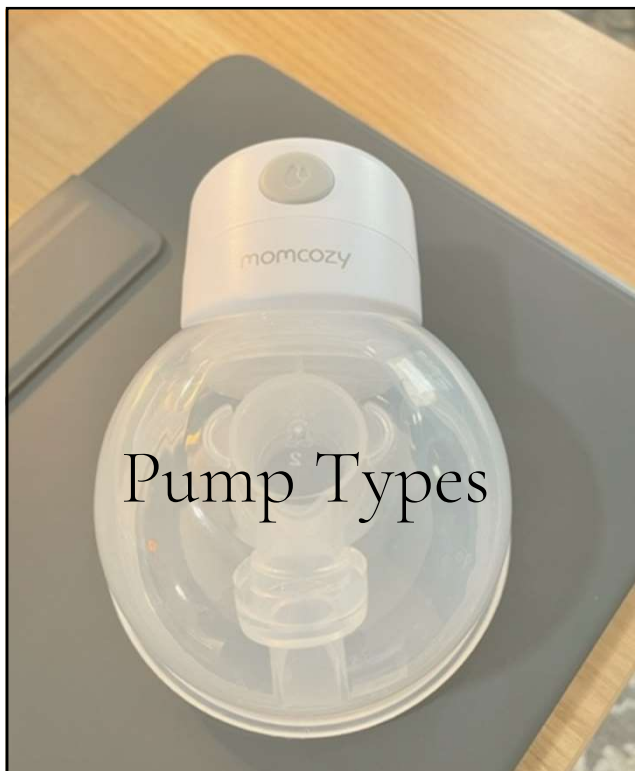
Adverse events are voluntarily reported to US Food and Drug Administration. From 1992 to 2003 the most reported events were:

- Pain
- Soreness
- Discomfort
- The need for medical intervention
- Breast tissue damage
- Infection
- Contamination of breastmilk

## Breast pump Adverse Events

*It was estimated by Brown et al., 2005 that events were likely grossly underreported.*

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## Pump Types

Manual

Double Electric

Portable

Wearable

Hospital Grade

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## Pump Types

### Manual

- Exerts Negative pressure (vs. Hand expression which is positive pressure)
- Takes more time
- Can do one side only
- Pressure controlled by user
- Anywhere any time
- Quiet
- Simple
- Fewer parts
- Can be inexpensive

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## Pump Types

### Double Electric

- Most used, easily available
- Exerts Negative suction pressure
- Saves time-both sides or one
- Suction Pressures range from 50-350 psi
- Quiet to noisy
- Simple to complex
- Fewer parts to lots of parts
- Can be expensive if not covered by insurance (\$150-300)
- May need to be powered by electricity or retain a charge
- Spectra, Medela, Ameda Lansinoh, Aeroflow Motif

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## Pump Types



### Portable

- Hold a charge or are battery dependent
- Exerts Negative suction pressure
- Increasing market share
- Suction Pressures range from 50-350 psi
- Quiet to noisy
- Have a separate pump and collection system
- Convenient/Time saver
- Able to multitask and be mobile
- Can be expensive if not covered by insurance (\$150-300)

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## Pump Types



### Fully Wearable

- Pump and collection system in one
- Quiet
- Portable
- Most discreet
- USB charging
- Up to 6 hours battery life
- Able to multitask and be mobile
- Best brands usually not covered by insurance (\$70-\$500)
- Contact variable
- Quality variable
- May not work for some moms
- Large secondhand sale market
- Must use manufacture parts
- Willow and Elvie most popular

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# Pump Types



## Hospital Grade

- Term not recognized/regulated by the FDA (Morales & Colvin, n.d.)
  - Rental/Multi User
  - Purchase-Single User
- Common types include Symphony, Limerick, Hygeia, Opera, Ameda
- Can be purchased second hand
- Originally intended for maternal infant separation
- Help establish vs maintain supply
- Used to have stronger suction
- More powerful motor
- Longer warranty
- Special wavelength, and programming

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Flanges

Membranes

Vacuum

Cycling/Wave forms

Bonus Features

## Pump Features



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## Flanges

- Most research from Bovine community- 27mm average for cow teats
- Manufacture availability varies
- Manufacture sizing recommendations vary
  - Measure nipple
  - Choose slightly larger size-Medela
  - Upsize by nothing,  $\frac{1}{4}$ "-10mm, "slightly larger", "snug fit"
- No best practices on sizing
  - Ruler vs. Visual vs. Coin vs. Calipers
- Endless variety of composition and shapes
  - Silicone, plastic, water filled, padded



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- Used by many pumps, but some are unique to pump brands
- Similar items may not be interchangeable
- Relatively inexpensive
- Should be replaced frequently
- Deterioration affects suction and function

## Membranes/Valves

*Medela Valve*

*Duckbill Valve*

*Membrane*

*Backflow Protector*



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## Vacuum

- Measured in mm Hg (negative pressure)
- Varies among pumps from 50mmHg to 350mm Hg
- Not regulated
- Measured infant sucking pressure 100-150 mmHg
- Pressure gauges can be helpful to evaluate and test pumps
- Testing can provide safe pressures to decrease the changes of pumping associated injuries

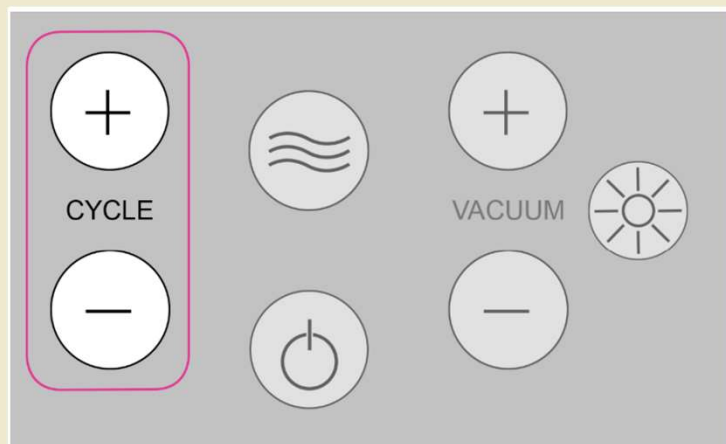
## Pump Features



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## Cycles/Modes

- Not consistent among pumps
- The **cycle speed** on your **Spectra S2** refers to the how many times the pump 'sucks' and releases per minute; this is measured in cpm (cycles per minute).
- Lansinoh-Pumping Style (match to babies suction pattern) Increased top suction hold before release from level 1-3 (longest hold)



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## Pump Accessories Aka-Gadgets

- **Apps** that track and trend volume, pumping time, average weekly output, mood, nutrition, supplements taken etc.
- **Automated Compression massage bra** by Lilo- increases output
- **LacTek baby motion flange**-sucks at the breast like a baby does.
- **Massagers**-to simulate more let downs
- **Liquid Silicone Shields**-Molds to breast like babies palate
- **Pumping Spray**-minimizes friction and prevents chafing



Legendary Milk Pumping Spray



Pumpables Liquid silicone flange

Lilo Massager + Bra



LaVie Lactation Massager

Ceres Chill Breastmilk Chiller (20 hours)



LacTek Baby Motion Flange



Mimics baby's suckling motions

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Note: \*\*\* baseline pressures depicted on the gauge are 50mmHg Actual tested pressures will appear on the screen.

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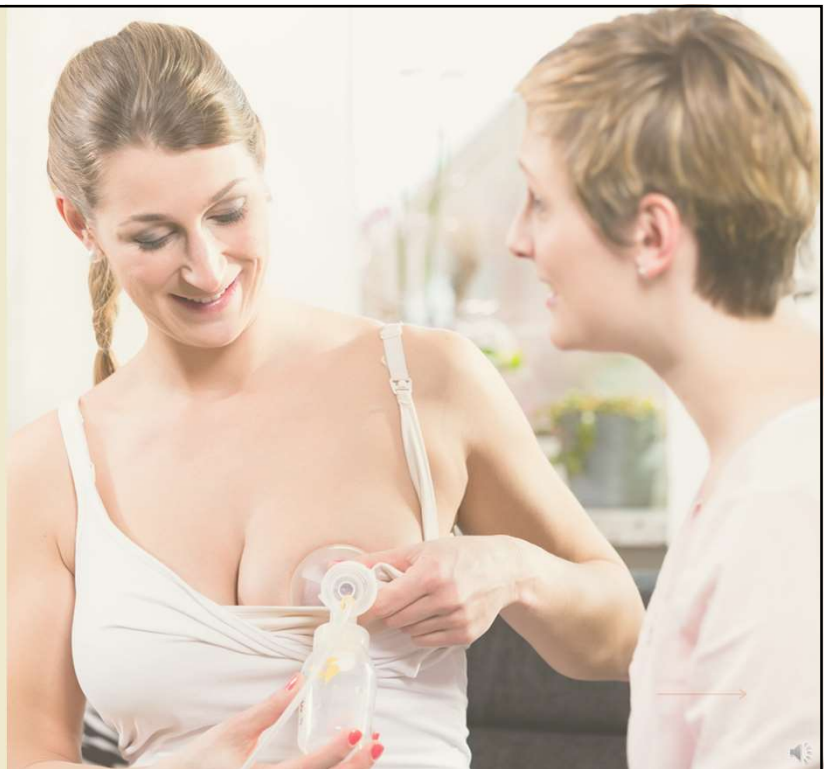
Which pump  
for which  
mother??

*Knowing about pump  
parts and mechanical  
function is great, but  
in order for a pump to  
be safe and effective, it  
must be customized to  
the user to the extent  
possible.*

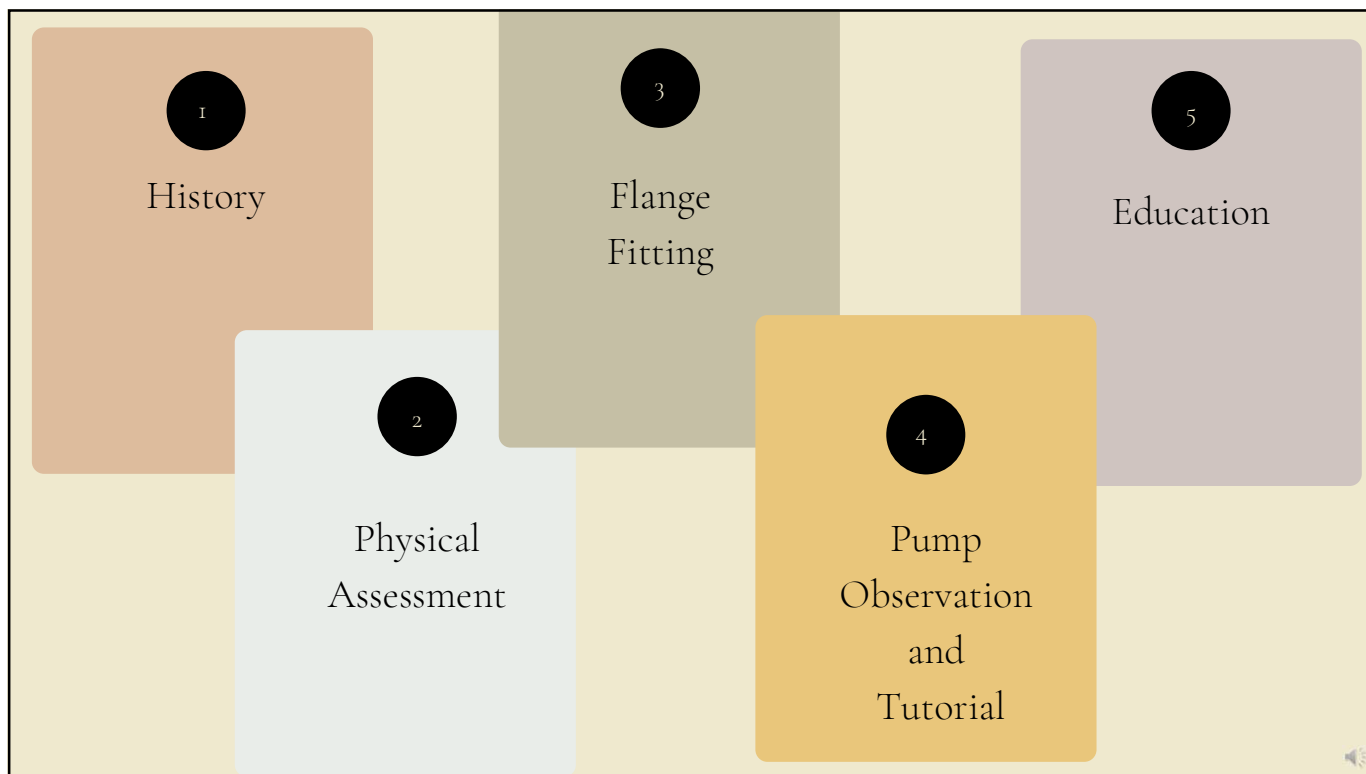


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What are the  
components of  
a Pump  
Assessment?



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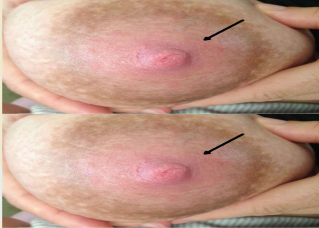
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## 2


### Physical Assessment



Nipple Infection (Khan & Ramirez, 2017)



Blocked Gland and Pore (Khan & Ramirez, 2017)



Inflammation/Edema-Silverette Cups

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#### Breast observation

- General
- Shape
- Size
- Leaking
- Scars/trauma

#### Nipple/Areolar observation

- Trauma
- Scar tissue/injury
- Infection
- Shape/type/size
- Montgomery glands
- Nipple pores

#### Breast palpation

- General tenderness
- Fullness
- Edema
- Lymph nodes tender
- Nodules
- Hard areas
- Compression/lateral and vertical


#### Nipple/areolar palpation

- General tenderness
- Measure wounds
- Evaluate depth
- Evaluate healing
- Inspect Montgomery glands
- Inspect nipple pores


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## 3

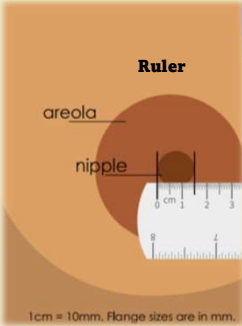
### Flange Fitting



Caliper  
(Fortin Higgins, 2022)



Measuring Tape  
Battery  
(Fortin Higgins, 2022)



Ruler  
areola  
nipple  
1 cm = 10 mm. Flange sizes are in mm.  
(Babies in Common, 2022)

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#### Initial Measurement

- Ruler
- Coin
- Caliper
- Batterie
- Flange fit guide

#### Visual Assessment


- Visualize estimated size using sample flanges if available
- Size up and down
- Evaluate contour and fit to breast

#### Type of flange

- Standard flange
- Specialty flanges
- Inserts
- Options



#### Find a place to start

- Choose the best visual/measured fit
- Have alternates available
- Use in pumping trial



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## Follow manufactures fitting guidelines..


Varies greatly among pump manufactures...

- Ameda – print ruler ¼" to 6mm
- Medela-add 4-6 mm
- Elvie-App fitting video
- Freemie- slightly larger than nipple
- Willow-App ruler add 1-4mm
- Pumpin Pals-sizing quiz (XS-XL correlate to standard mm sizing)
- Lakteck-add 0-2 mm
- Maymom -add 3-5 mm, silicone or hard



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## How to Fit Breast Pump Flanges



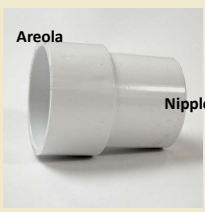
Institute for the Advancement of Breastfeeding and Lactation Education (IABLE)

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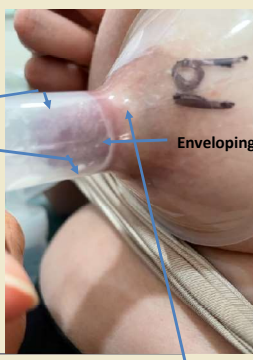
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Pump  
Observation/  
Tutorial

Enveloping



Gaps



Enveloping

Blanching

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<b>Process</b>	<b>Vacuum/Cycle</b>	<b>Observation</b>	<b>Feedback</b>
<ul style="list-style-type: none"> <li>• Set up pump</li> <li>• Use/access resource information if needed</li> <li>• Prepare for milk storage</li> <li>• Start in stimulation</li> <li>• Move to expression</li> </ul>	<ul style="list-style-type: none"> <li>• Test vacuum in both cycles with gauge if needed</li> <li>• Be familiar with pump vacuum capacity and settings</li> <li>• Start on lowest vacuum</li> <li>• Increase gradually</li> <li>• Vary cycles to evaluate comfort</li> </ul>	<ul style="list-style-type: none"> <li>• Nipple fit</li> <li>• Areolar sleeve/enveloping</li> <li>• Areolar pulling into flange</li> <li>• Blanching</li> <li>• Air Gaps in funnel</li> <li>• Milk Leaking</li> <li>• Poor seal</li> </ul>	<ul style="list-style-type: none"> <li>• Comfort in both cycles</li> <li>• Time to let down</li> <li>• Sprays vs. drips</li> <li>• Timing of volume collected</li> </ul>

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Education

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<b>Customized Info</b>	<b>Timing and Duration</b>	<b>Expected Changes/Outcomes</b>	<b>Pumping Experience</b>
<ul style="list-style-type: none"> <li>• Suggested Flange sizes</li> <li>• Resources for accessories</li> <li>• Customized safe vacuum and cycle settings</li> </ul>	<ul style="list-style-type: none"> <li>• Customize to needed collection volume</li> <li>• Customize to production rate and anatomy</li> <li>• Customize to supply</li> </ul>	<ul style="list-style-type: none"> <li>• Normalize collection volumes</li> <li>• Address wound healing</li> <li>• Address nipple care</li> <li>• Address expected changes in comfort and production</li> <li>• What to watch out for</li> </ul>	<ul style="list-style-type: none"> <li>• Allow to verbalize feelings</li> <li>• Provide resources for time management</li> <li>• Assist with goal reframing if needed</li> <li>• Refer if unable to resolve issues</li> </ul>

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### *What mothers wanted to know:*

(Dietrich Leurer et al., 2019)

- ☀ Practical Information about how to pump
- ☀ How often to pump
- ☀ How long to pump
- ☀ How to store milk
- ☀ How the pumping process effects supply
- ☀ Product information about their pump
- ☀ General support and encouragement

### *What mothers need to know:*

- ☀ Risk factors when pumping
- ☀ What size flanges may work best
- ☀ Expected Milk Volumes
- ☀ How to clean breast pump parts
- ☀ Possible side effects of pumping and what to report

### **What Education is Most Important after a Breast Pump Evaluation?**

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Proper breast pump fit and use are important to optimize breastmilk supply and prevent injury.

As breast pumps continues to evolve and the number of women using them remains a substantial majority, health care professionals need to maintain a thorough understanding of this tool to help mothers succeed.

(EGLASH & MALLOY, 2015)

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## *The Perfect Pump*



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## *The REAL Perfect Pump*



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# Resources

## Videos/Tutorials

How to fit breast pump flanges-Institute for the Advancement of Breastfeeding and Lactation Education  
<https://www.youtube.com/watch?v=TpAnNNpRwx8>

Testing breast pumps with a gauge-Momentum Lactation

New Little Life - Allison Tolman, Birth Doula. (2022, July 11). *Breast Pump Webinars*. New Little Life.  
<https://www.newlittl life.com/breast-pump-webinars/>

Pumping and Feeding Gear Workshop for IBCLCs-Babies in Common  
<https://www.babiesincommon.com/forprofessionals/pfgibclcs>

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# Resources

## Guides

*Correctly Fitting Breast Shields: A Guide for Clinicians.*

<https://dph.georgia.gov/sites/dph.georgia.gov/files/Breastshield%20Fitting%20and%20Size.pdf>

Using a Pressure Gauge to Test Breast Pump Performance. In *Oregon WIC Breastpump Handbook*.

<https://www.oregon.gov/oha/PH/HEALTHYPEOPLEFAMILIES/WIC/Documents/bf/medela-press-gauge-instruct.pdf>

*Flange FITS Guide –Babies in common*

<https://www.babiesincommon.com/flange-fits-guide?>

Breast pumps Skills and Billing

<https://californiabreastfeeding.org/wp-content/uploads/2019/02/Genevieve-Colvin.pdf>

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# Resources

## Websites

How to keep your breast pump kit clean:

<https://www.cdc.gov/healthywater/pdf/hygiene/breast-pump-fact-sheet.pdf>

Breast pumps and hand expression: guides to use and troubleshoot pumps

<https://www.michigan.gov/mdhhs/assistance-programs/wic/breastfeeding/supports/breast-pumps-and-hand-expression>

*What to Know When Buying or Using a Breast Pump.* U.S. Food And Drug Administration.

<https://www.fda.gov/consumers/consumer-updates/what-know-when-buying-or-using-breast-pump>

Evidence-based breastfeeding guidance for families and the communities that support them

<https://physicianguidetobreastfeeding.org/>

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LACTATION

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