Exmobaby and Autism

May 2011

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Exmobaby Product Overview

Exmovere Holdings is moving into biosensor enhanced baby monitor products and apparel branded as 'Exmobaby'. These products will initially include manufacturing and marketing of comfortable and non-invasive "smart garments". The baby garments – pajamas, sleepers, and other apparel – will contain fully integrated, cutting edge sensor technology. Biosensor technology will monitor the vital signs and movements of baby at critical times for baby's health, as well as throughout the day. In addition, the fully integrated capabilities built in to the clothing and apparel will provide wireless communication and evaluation of information for the parents.

Based on patents licensed from Sensatex and Georgia Tech, Exmobaby is the world's only baby sleep garment that does not depend on a human being to communicate how a baby is feeling. Thanks to embedded electrocardiogram, skin temperature, moisture and movement sensors, the Exmobaby system wirelessly transmits a baby's vital sign data to a PC located within 100 feet.

From there, Exmobaby software can detect patterns, anomalies and emotions. It also can alert smartphone users, including parents, nannies, physicians and any other selected care providers. Normal baby monitors depend on a person to pay attention to a microphone and speaker system. Exmobaby will pay attention while a baby sleeps, even if everyone else is asleep too.

For example, if the baby in the picture below gets too rowdy with the dog, Exmobaby will alert parents and other caregivers that baby needs attention.

Baby monitors have made a mark with their presence in the minds of mothers with new born babies and toddlers. But, they still require parent interaction, "monitoring", and some type of human intervention. The increased incidence of pre-mature births (about 13%) has heightened these parents' concerns for their child's safety. And, there have been significant increases in infant-related health concerns over the past 3-5 years, creating even more concern in the minds of new parents. For first-time parents, parents of premature babies and all parents of newborns Exmobaby will provide a unique experience. Biosensor devices will be integrated into the child's garments. Wireless transmission of data and information will be sent to the nearest personal computer or laptop. As the child's condition or movement changes, text messages (through SMS cell technology) or email alerts (through wireless internet connection) will be sent to parents. The new technology and its application to baby clothing and apparel will provide a true peace of mind experience for parents.

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Each year, there are approximately 4.1 million births in the US alone and worldwide there are more than 140 million newborns. In the US, over half are first time births – approximately 2 million per year. First time parents are particularly apprehensive about their new experiences and responsibilities with newborns. Concern for the child's safety and worry about the child's condition are naturally a top-priority for parents of newborns. Exmobaby's new baby monitor is designed to specifically address these early concerns and provides maximum reassurance for the new parents.

According to the latest reports for 2010, the Center for Disease Control estimates that 1 out of every 110 children in the U.S. is affected by Autism Spectrum Disorders. Autism Spectrum Disorders (ASDs) are a group of developmental disabilities that can cause significant social, communication and behavioral challenges. People with ASDs handle information in their brain differently than other people, possibly due to neurological factors or disorders in the nervous system. These latest statistics represent a significant increase in autism incidence from the 1 out of 150 children reported in 2006. Over the past 5 years, the incidence of autism among children in the U.S. – including newborns and infants – has increased about 30%.

Several infant and child development milestones have been established by pediatricians and the medical community by age group. For newborns and infants 3 months or younger, the CDC provides the following general guidelines in social/emotional, movement, vision, and hearing/speech.

Social and Emotional

- Begins to develop a social smile
- Enjoys playing with other people and may cry when playing stops
- Becomes more expressive and communicates more with face and body
- Imitates some movements and facial expressions

Movement

- Raises head and chest when lying on stomach
- Supports upper body with arms when lying on stomach
- Stretches legs out and kicks when lying on stomach or back
- Opens and shuts hands
- Pushes down on legs when feet are placed on a firm surface
- Brings hand to mouth
- Takes swipes at dangling objects with hands
- Grasps and shakes hand toys

Vision

- Watches faces intently
- Follows moving objects
- Recognizes familiar objects and people at a distance
- Starts using hands and eyes in coordination

Hearing and Speech

- Smiles at the sound of your voice
- Begins to babble
- Begins to imitate some sounds
- Turns head toward direction of sound

Monitoring these development milestones is today more an art than a science. Without good recordkeeping, pediatricians rely on parent and caregiver memory on how baby is progressing and over what time period. More importantly, when baby arrives at the doctor or pediatrician office for a checkup – the CDC recommends developmental assessments at 3, 6 and 9 months of age – examinations and discussions between doctor and parent are confined to what is observed at that time, what was observed in prior checkups, or what parents can remember.

With Exmobaby data gathering and reporting, parents, caregivers and pediatricians have access to objective and continuous information about baby's development over time. These records and reports then can become an integral part of baby's care and potential diagnoses. There may also be specific ways pediatricians can coach new parents on how to use the Exmobaby product to help assess baby's development.

For example, one of the "red flags" noted in early diagnoses of ASDs is a lack of response from baby to the use of their name. Parents can potentially use Exmobaby to record times when baby's name was said or repeated so that the reports will correlate any movement or vital sign response. Then, after a period of weeks or months, pediatricians can use the reports to help assess baby's developmental state and the potential risk of ASDs.

The CDC lists other criteria to monitor for infant and child development which may signal problems or concerns that need to be addressed.

Developmental Health Watch

- Does not seem to respond to loud noises
- Does not notice hands by 2 months
- Does not follow moving objects with eyes by 2 to 3 months
- Does not grasp and hold objects by 3 months
- Does not smile at people by 3 months
- Cannot support head well by 3 months
- Does not reach for and grasp toys by 3 to 4 months
- Does not babble by 3 to 4 months
- Does not bring objects to mouth by 4 months
- Begins babbling, but does not try to imitate any of your sounds by 4 months
- Does not push down with legs when feet are placed on a firm surface by 4 months
- Has trouble moving one or both eyes in all directions
- Crosses eyes most of the time (occasional crossing of the eyes is normal in these first months)
- Does not pay attention to new faces, or seems very frightened by new faces or surroundings
- Experiences a dramatic loss of skills he or she once had

Specific tests and reporting can be designed in consultation with pediatricians to use Exmobaby capabilities to assist with diagnoses of ASDs and related developmental disorders. Based on the facts and objective information recorded and reported by Exmobaby, parents and healthcare professionals no longer have to rely only on what they have seen, observed or remembered.

Recent research and studies have shown that about one third of parents of children with an ASD noticed a problem before their child's first birthday, and 80% saw problems by 24 months. Can the new Exmobaby garment with its constant monitoring and reporting of vital signs, movement and baby's condition help parents and pediatricians diagnose ASDs earlier? Exmobaby garments with wireless transmission of data and related reports offer an objective, technology-based way to gather information that can be combined with parents' observations and help support pediatrician interpretations. This combination can potentially contribute to early diagnosis and treatment. And, the Center for Disease Control notes in its latest research and reports, "early intervention treatment services can greatly improve a child's development", making a difference in that child's quality of life and the parent's peace of mind.

Exmobaby and Autism Spectrum Disorders combine the newest technologies and innovations in biomedical engineering to help design ways to evaluate and test for known disorders or disease states. By using smart-garment technology, proprietary design and software engineering, existing hardware on commonly used electronics, and life stage needs of newborns and their parents, Exmovere Holdings Inc. has created a new paradigm. This paradigm shift is being used to address the needs of over 2 million babies, parents and caregivers in the U.S. as well as 140 million worldwide each year, with a potential market value of over $5 billion each year.